

Chiba University AP

International Research Session For Next Generation

2020.02.16

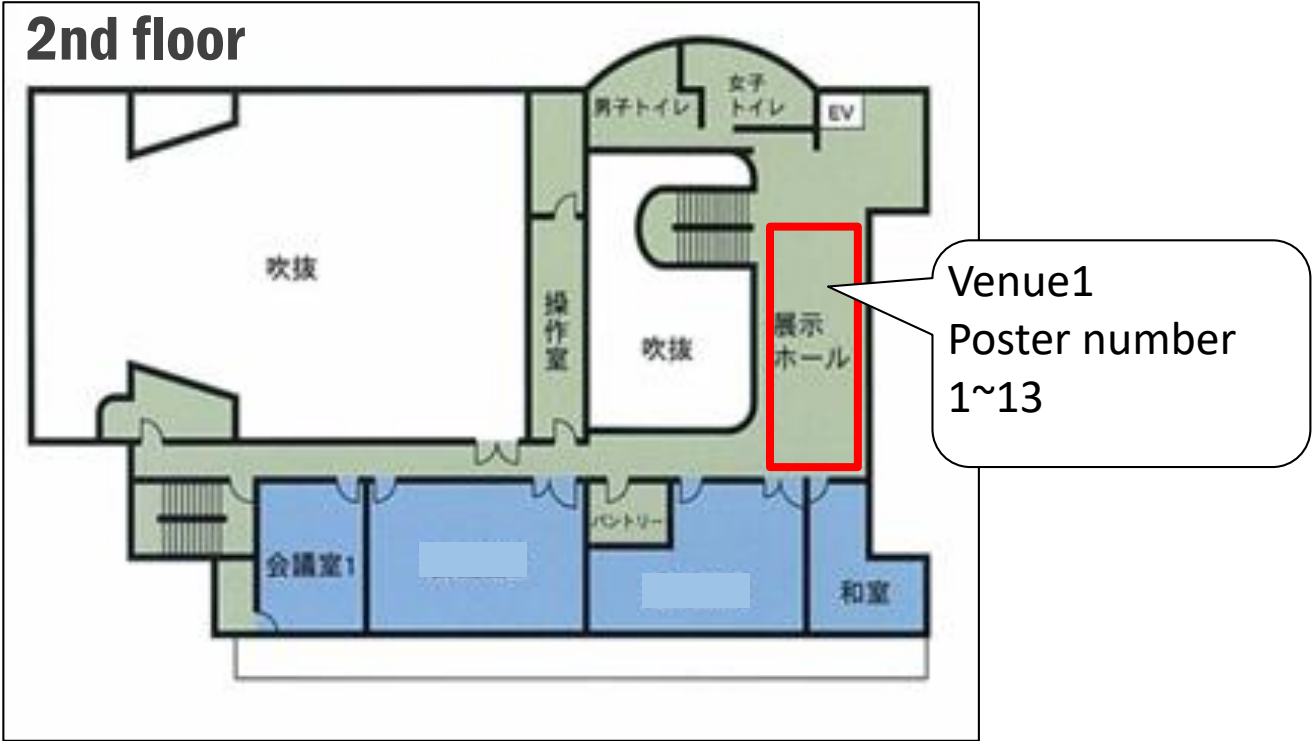


Schedule

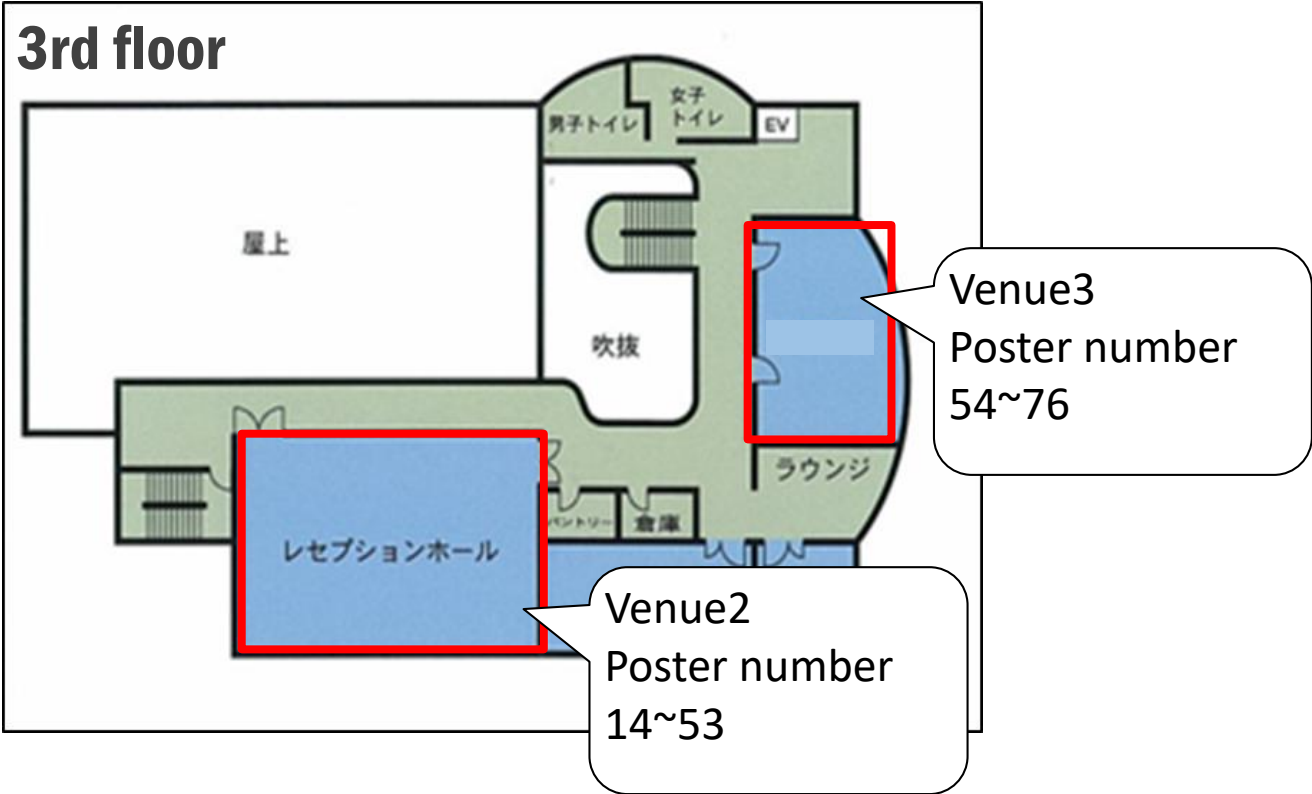
Time / 時間		Place / 会場	Detail / 詳細
08:30-08:50	20min	Keyaki Kaikan 1F けやき会館1階	Reception 受付
09:00-09:40	40min	Keyaki Kaikan 1F Hole けやき会館1階大ホール	Opening Ceremony 開会式
09:40-10:40	60min		Oral presentation AP高校生・留学生 30秒間口頭発表
10:40-11:00	20分	Keyaki Kaikan 2F/ 3F 1階ホール→ポスター会場	Break 移動・準備・小休憩
11:00-12:15	75分	Keyaki Kaikan 2F・3F けやき会館2階・3階	Poster presentation ポスター発表 even numbers 11:00-11:30 all numbers 11:30-11:45 odd numbers 11:45-12:15
12:15-12:30	15分	Faculty of Education けやき会館→教育学部	Break (Move to lunch room) ※Lunch room : Faculty of Education 移動
12:30-13:15	45分	Faculty of Education 教育学部	Lunch Time 昼食
13:15-15:00	105分	Faculty of Education 教育学部	Group discussion 英語アクティビティー
15:00-15:20	20分	Keyaki Kaikan 教育学部→けやき会館	Break (Move to Keyaki Kaikan) 移動
15:20-16:00	40分	Keyaki Kaikan 1F Hole けやき会館1階	Closing Ceremony 閉会式
16:00		Keyaki Kaikan 1F Hole けやき会館1階	Photo 写真撮影

Poster Presentation Map

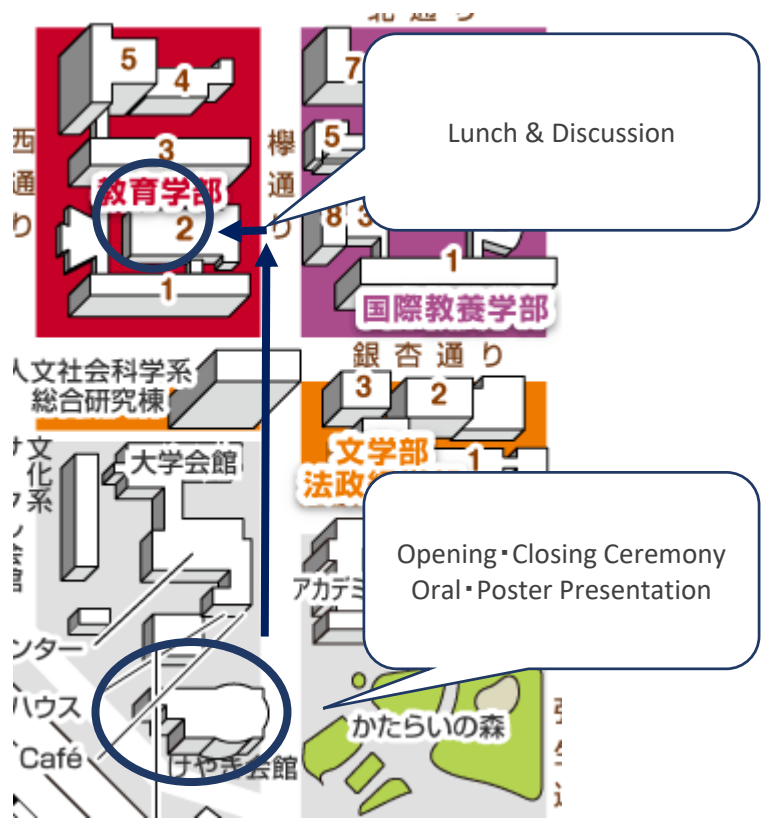
2nd floor



3rd floor



Lunch & Discussion Room Map



Faculty of Education Building2 (2nd floor) / 教育学部2号館2階

Room 2202	Room 2204	2206		
Room 2201	Room 2203	Room 2205		

The venue for lunch activities is listed on the back of the nameplate.

ランチ・アクティビティーの会場は名札の裏に記載しています。

ESD Posters(No.01- 13)

01. **ESD of SAKURAGAOKA** 2nd floor, hole
Chiba Prefectural Sakuragaoka School for special need education
02. **ESD of Shimofusa High school , Manufacturing , Personality Education** 2nd floor, hole
Chiba Prefectural Shimofusa High School
03. **KAMAGAYA NISHI HIGH SCHOOL'S Activities For A Better World 2019** 2nd floor, hole
Chiba Prefectural Kamagaya Nishi High School
04. **Kokubun High School Think globally , Act locally** 2nd floor, hole
Chiba Prefectural Kokubun High School
05. **ESD of Sakura Minami High school , Exchange activities and Volunteer** 2nd floor, hole
Chiba Prefectural Sakuraminami High School
(Sugano, Nishimoto, Uemura, Uchiyama, Hayashi, Fukahori, Takahashi, Kataoka, Noguchi, Ishii)
06. **Activity Report Educational for Sustainable Development** 2nd floor, hole
Ichihara Chuo High School
07. **Matsukoku SDGs!!** 2nd floor, hole
Chiba Prefectural Matusdo Kokusai High School
08. **Cambodia Study Tour ស្រុកស៊ី !** 2nd floor, hole
Chiba Prefectural Chiba Higashi High School
(Matsuura Chisa)
09. **Host Family Clarkston high school** 2nd floor, hole
Chiba Prefectural Chiba Higashi High School
(OKA Rinka)
10. **Reimei Green Project 2019** 2nd floor, hole
Chiba Reimei High School
11. **Welcome to Chiba blind school** 2nd floor, hole
Chiba Prefectural Chiba Blind School
12. **Nagareyama Otakanomori High School ESD Initiative** 2nd floor, hole
Chiba Prefectural Nagareyama Otakanomori High School
13. **The First International Interaction** 2nd floor, hole
Chiba Prefectural Nagareyama High School

- 14. Comparison of Soil between Malaysia and Japan** 3rd Floor – Room 2
Chiba Prefectural Kisarazu High School
(HATANAKA Eita, WATANABE Nagisa, ABE Yuuki, KOIZUMI Aoi, YAHARA Kanna)
- 15. The Current Situation and Future on Organic Farming** 3rd Floor – Room 2
Chiba Prefectural Kisarazu High School
(ISHIKAWA Kaede, KOCHA Anri, ARAI Natsuki, MATSUSHITA Masaharu)
- 16. What Is Biomass Plastics ?** 3rd Floor – Room 2
Chiba Prefectural Kisarazu High School
(SHIINA Erika, SATO Nonoka, HARUKAWA Kai)
- 17. How to Recycle Food Waste Efficiently** 3rd Floor – Room 2
Chiba Prefectural Kisarazu High School
(UNOKI Yusuke, TAKAURA Haruka, ITOU Riko, KASORI Takuma)
- 18. What Can We Do to Achieve SDGs?** 3rd Floor – Room 2
Chiba Prefectural Kisarazu High School
(TANAKA Moka, SATOMI Neneka, ISOBE Kotoha)
- 19. What Should We Do to Protect Satoyama?** 3rd Floor – Room 2
Chiba Prefectural Kisarazu High School
(IWAMOTO Yui, YOSHIDA Saki, HAGA Azusa, WATANABE Shiho, YASUDA Akane)
- 20. Color Blindness** 3rd Floor – Room 2
Chiba Prefectural Higashi-Katsushika High School
(SUZUKI Ayaka)
- 21. Cerebral Abscess** 3rd Floor – Room 2
Chiba Prefectural Higashi-Katsushika High School
(ARAKI Haruka)
- 22. Surpress myopia progress with sunlight** 3rd Floor – Room 2
Chiba Prefectural Higashi-Katsushika High School
(SATO Akemi)
- 23. Save Borneo from deforestation - Palm Oil and RSPO -** 3rd Floor – Room 2
Tokyo Metropolitan High School of Science and Technology
(YAMAUCHI Mikoto, SHISHIDO Yu, TANAKA Hinata)
- 24. Iriomote island - A Good and Bad sides -** 3rd Floor – Room 2
Tokyo Metropolitan High School of Science and Technology
(ASAKAWA Hana, ICHIKAWA Haruna, TAKAO Satsuki)
- 25. The Effect on The Different Extraction Time of Kawa Daun Beverage (Coffea cannephora) Which Use Ultrasonic Bath Towards Components of Bioactive Extract** 3rd Floor – Room 2
Bogor Agricultural University (IPB), Indonesia
(Ifwarisan Defri)
- 26. EVALUATION OF LINEAR MODELS AND LINEAR MIXED MODELS TO PREDICT THE EFFECTS OF ANTIMICROBIAL PEPTIDES ON BROILER PERFORMANCE** 3rd Floor – Room 2
Bogor Agricultural University (IPB), Indonesia
(Mohammad Miftakhus Sholikin)
- 27. Principle mechanism of A strolabe** 3rd Floor – Room 2
Chiba Prefectural Yakuendai High school
(SAKAMOTO Marina)

28. **Creating of Biodegradable fiber reinforced plastic** 3rd Floor – Room 2
Tokyo Metropolitan Tama High School of Science and Technology
(WADA Momoka, IMAMICHI Teru)
29. **Inspection of the Mupemba Effect** 3rd Floor – Room 2
Chiba Prefectural Chiba Higashi High School
(TAKAHASHI Gen, FUJISHIRO Kouki)
30. **Study about Bismuth crystal** 3rd Floor – Room 2
Chiba Prefectural Higashi-Katsushika High School
(YOSHIDA Hana)
31. **Verification of Desalting Effect of Seawater Using Synthetic Zeolites** 3rd Floor – Room 2
Tokyo Metropolitan High School of Science and Technology
(NITTA Honoka)
32. **Effect of Additive Differences in Bromine-Based Plastic Pyrolysis Treatment** 3rd Floor – Room 2
Tokyo Metropolitan High School of Science and Technology
(TORITSUKA Moemi, HANAZAWA Kimi)
33. **Fabrication of Superhydrophobic Bamboo Based on ZnO Nanosheet Networks** 3rd Floor – Room 2
Universitas Pendidikan Indonesia, Indonesia
(Adinda Saraswati, Tri Suhartono)
34. **In search of beautiful chemical lights ∼ concentration and me∼** 3rd Floor – Room 2
Chiba Municipal Chiba High school
(KIKUCHI Miyuki, YASHIMA Toa,)
35. **Luminol Reaction ∼ Looking for the Reason of Faint Lights∼** 3rd Floor – Room 2
Chiba Municipal Chiba High school
(TANAKA Yusuke, SUGIYAMA Shota)
36. **To dye with gentian Color** 3rd Floor – Room 2
Chiba Prefectural Yakuendai High school
(YOSHIMURA Haruna)
37. **Make delicious Onsen Manjyu** 3rd Floor – Room 2
Chiba Prefectural Yakuendai High school
(MIYASHITA Tomoaki)
38. **Math on the clock** 3rd Floor – Room 2
Chiba Prefectural Yakuendai High school
(KIMIJIMA Kenta, SAKAMOTO Takuto)
39. **Simulation of TERAHERTZ FREQUENCY metal detection in airport security system** 3rd Floor – Room 2
Universitas Indonesia
(HENDRY STEVEN JOSHUA MARBUN, IRFAN BUDI SATRIA, GITA AYU SALSABILA)
40. **ICT usages in Yogyakarta's tourist villages** 3rd Floor – Room 2
Universitas Gadjah Mada, Indonesia
(ULFAH CHOIRUNNISA, RAHMA AULIA ZAHRA)

41. **Absorption Experiment of Radioactive Material by Soil** 3rd Floor – Room 2
Tokyo Metropolitan Tama High School of Science and Technology
(MIYAKE Rina)
42. **Power of the waste~Recycle of banana peels** 3rd Floor – Room 2
Tokyo Metropolitan Tama High School of Science and Technology
(OISHI Kana, TSUDA Hikaru)
43. **Thermal decomposition of peanut** 3rd Floor – Room 2
Tokyo Metropolitan Tama High School of Science and Technology
(MINAMIKAWA Haruka, SAITO Moe)
44. **Research on microplastics on the beach in Chiba** 3rd Floor – Room 2
Chiba Prefectural Chiba Higashi High School
(MACHIDA Akira, MIIKE Yuuki)
45. **Variability Analysis of Sea Surface Temperature and Chlorophyll-A Concentration In South Java and West Sumatra During Period 2005 - 2014** 3rd Floor – Room 2
Institute of Technology Bandung, Indonesia
(Erlin Beliyana , Purwanti Lelly Sabrina)
46. **Indoor air quality: Carbon Dioxide (CO2) Concentrations in Classrooms** 3rd Floor – Room 2
Chulalongkorn University, Thailand
(Supitcha Sukprasert)
47. **Comparison of Muay-Thai training program for increasing of MuayThai athletes' muscle strength** 3rd Floor – Room 2
Mahidol University, Thailand
(Khomkrit Muadmai)
48. **The development of learning material using Arduino to investigate the gas law** 3rd Floor – Room 2
Chiang Mai university, Thailand
(Kansuda Mayer)
49. **Autonomy Support, Competence and Motivation in Science as Predictors of Students' Intention to Pursue the Science, Technology, Engineering and Mathematics (STEM) STRAND in K to 12 Senior High School** 3rd Floor – Room 2
University of San Carlos, Philippine
(DELIGERO VIRGIE LEE ESCASINAS)
50. **COMMON STUDENTS' MISCONCEPTIONS IN THERMODYNAMICS** 3rd Floor – Room 2
Pangasinan State University, Philippine
(Frienzky B. Macayana)
51. **The Effects of Ionizing Radiation on Human Physiology** 3rd Floor – Room 2
Royal University of Phnom Penh , Cambodia
(Vong Chenda , Thong Sivmey)

- 52. TWINCLE PROGRAM IN THAILAND_UNIT A** 3rd Floor – Room 2
Chiba University
(SUGIYAMA KeKentaro, CHIBA Akari, MATSUMOTO Chihori, ITO Kimika)
- 53. TWINCLE PROGRAM IN THAILAND_UNIT B** 3rd Floor – Room 2
Chiba University
(KAMATA Enami , ENDO Kaho, TANABE Airi, SHIMAZAKI Ryushi)
- 54. TWINCLE PROGRAM IN THAILAND_UNIT C** 3rd Floor – Room 3
Chiba University
(ASHITOMI MAO, MASHIKO NANA, MIZUI AMON, DOI Taketo)
- 55. TWINCLE PROGRAM IN THAILAND_UNIT D** 3rd Floor – Room 3
Chiba University
(ARAI Sakura, KAGA Taisei, YAMAMOTO Shotaro, MATSUMOTO Karen)
- 56. KYUSU PROJECT** 3rd Floor – Room 3
Chiba Prefectural Sakura High School
(TAKANO Mizuka, NUKAYA Nodoka, HAMADA Mona, MYOJIN Hitomi, WATANABE Mizuki)
- 57. Increasing Muslim Tourism by Halal Ramen** 3rd Floor – Room 3
Chiba Prefectural Sakura High School
(IMANISHI Yuto, KASHIWABARA Natsuki, SAKANO Azu, SANBE Momoka)
- 58. Eliminating the Education Gap Between Rural and Urban Areas in Vietnam** 3rd Floor – Room 3
Saitama Prefectural Urawa Girls' Upper Secondary School
(SHIBATA Hana, FUJISAWA Kotoha, HOSOBABA Miho, MURAKAMI Nozomi)
- 59. Improving Labor Productivity in Vietnam Before the Economic System is Established.** 3rd Floor – Room 3
Saitama Prefectural Urawa Girls' Upper Secondary School
(OTSUKA Atsuko, ONO Nozomi, KUBOTA Riko, SUZUKI Futaba, YAMAGUCHI Yumeko)
- 60. Change of 'Village of Negishi in Tokyo'** 3rd Floor – Room 3
Shibaura Institute of Technology Kashiwa High School
(SHIBA Risako)
- 61. The Relationship Modern Japan and old proverbs** 3rd Floor – Room 3
Shibaura Institute of Technology Kashiwa High School
(KANEDA Aruto)
- 62. Why do Japanese use Chopsticks** 3rd Floor – Room 3
Shibaura Institute of Technology Kashiwa High School
(NISHIKAWA Yunosuke, HANAOKA Ayumu)
- 63. Chronic hunger and aid** 3rd Floor – Room 3
Shibaura Institute of Technology Kashiwa High School
(TAMAO Yuko)
- 64. Male discomfort with women-only car** 3rd Floor – Room 3
Shibaura Institute of Technology Kashiwa High School
(TANIBUCHI Haruya, YONEDA Eisuke)
- 65. Responsibility of Automatic Vehicle accident** 3rd Floor – Room 3
Shibaura Institute of Technology Kashiwa High School
(MACHIDA Kazuma, YAMAZAKI Junki)

- 66. Process of Juvenile Criminals** 3rd Floor – Room 3
Chiba Prefectural Higashi-Katsushika High School
(YAMAMOTO Airi)
- 67. A Japanese Fantasy 「MORIBITO」** 3rd Floor – Room 3
Chiba Prefectural Higashi-Katsushika High School
(MURAMOTO Koharu)
- 68. Atami's tourism and economy** 3rd Floor – Room 3
Chiba Prefectural Higashi-Katsushika High School
(SUGITA Haruka)
- 69. Shinsengumi** 3rd Floor – Room 3
Chiba Prefectural Higashi-Katsushika High School
(KUBOTA Moe)
- 70. The progress of Japanese women in society as seen through "Asadora"** 3rd Floor – Room 3
Chiba Prefectural Higashi-Katsushika High School
(KURATA Rei)
- 71. Effects of Letter Colors for Word Memorization** 3rd Floor – Room 3
Shibaura Institute of Technology Kashiwa High School
(TOYOSHIMA Nagi)
- 72. The name of Balinese** 3rd Floor – Room 3
Udayana University Bali, Indonesia
(WAYAN GALANG ADING ARDIKA, YOSHE STEPHANIE)
- 73. Traditonal Thai Ghosts** 3rd Floor – Room 3
Kasetsart University, Thailand
(TAOTONG NATCHA , BENJERD SINEWADEE, JIRAPOTE KRITTABOON , KETHIRUN JIPATCHAYA)
- 74. Naga Fireball Festival (“Bung Fai Paya Nak”)** 3rd Floor – Room 3
King Mongkut's University of Technology Thonburi, Thailand
(PURWANTI LELLY SABRINA, ERLIN BELIYANA)
- 75. The soul of Vietnamese Cuisine** 3rd Floor – Room 3
University of Education, Vietnam National University, Hanoi, Vietnam
(NGUYEN XUAN DUNG, VU MINH HIEU)
- 76. Laos Cultures** 3rd Floor – Room 3
National University of Laos, Laos
(XAIYAVONGSA SOMCHAI, XAIYAKET SENGPHET)

桜が丘のESDは「つながり」をキーワードとし、小中高の各学
部で様々な活動に取り組んでいます。本校での取り組みを地域に、
そして社会に知ってもらうことで、私たちの目指す、障害の有無に
関係なく、人々が助け合い認め合いながら生活することのできる
「共生社会の構築」に近づくと考え、発信し続けています。
「Our school aims to build an inclusive society」
今年度高等部では、SDG×オリパラをテーマに、様々な活動
に取り組みました。
「Our theme is SDGs and Olympic Paralympic Games」

桜が丘特別支援学校のESD
つたえること、つなぐこと、ひろげること
Telling, connecting, widening

SUSTAINABLE DEVELOPMENT GOALS
TOOKYO 2020

学校内でのつながり
つなぐこと
Connecting with the school
地域とのつながり
つなぐこと
Connecting with the community
学校外とのつながり
つなぐこと
Connecting with the society

障害のある人と障害がなく、人と人が助け合い認め合いながら
生活することのできる共生社会の構築をめざす
(Towards an Inclusive Society)

持続可能なオリパラ～共生社会の構築を目指して～ Sustainable Tokyo 2020. Aims to build an inclusive society.

私達が考える持続可能なオリパラ We think about Sustainable Olympic and Paralympic Games

今年の文化祭では、『私達が考える持続可能なオリパラ』について調べ、考えをまとめました。「オリ
パラが開催されることで人が集中することから生じる環境問題」「食品ロス」「難民選手団」など、生徒
それぞれが興味のある事柄についてポスターをまとめ、掲示し、来場した方々に説明しました。We
announced what we examined at the school festival. For example, environmental issues, refugees
and food loss etc.

オリジナルの競技カルタを作成。
小学生から大人まで一緒に対戦。
We played in handmade carta.

SDGsのアイコンを的
にボウリングゲーム。
Play with Boccia game.

持続可能なオリパラを実現させるための
アイデアを集めました。
We have gathered sustainable ideas

SDGsのアイコンやオリパラのエン
ブレムを使ったパズルゲームを作成
We played in handmade puzzle.

市原八幡高校との交流学習 Interact with Ichiharayawata

バラスポーツの選手と交流 Interact with Para athletes.

持続可能なオリパラを実現させるための様々なアイデアを出
し合い、グループごとに発表、共有しました。
We had various ideas for realizing sustainable of the Tokyo
2020 and presented and shared them for each group.

難民選手団について学習しま
した。グループワークでは難民
の家族を想定し、荷物や搬送す
るための話し合いをしました。
世界で起こる問題を自分に置き
換えて考え、意見を交すことが
できました。
We learned about
the refugee team.

体育の授業に選手を招き、チームリフレに挑戦。神経を研ぎ
澄まして集中し、10m先の的を狙いました。ライフル銃の重さ
にびっくり！ We experienced a beam rifle.

ウィルチェアラグビーの選手と交流。トライを目指して果敢
にアタック。白熱したゲームを繰り広げていました。We played
wheelchair rugby very exciting with the players.

成果○課題○(Achievements and Challenges for the better ESD of SAKURAGAOKA)

○文化祭で来場者をおもてなしたことや、バラスポーツの選手との体験を経て、学校外の人とつながることが大切だと感じた。人との
つながりは視野を広げ、多くの学びがあった。Connecting with people broadens the way of thinking. We have learned a lot.

○日本や世界の課題に着目し、私達高校生が自分たちの考えを社会に発信し、参画していくことが、共生社会の構築につながることを実感した。
「SDGs」と「オリパラ」という視点で、世界の課題を解決するための自分の考えを持ち、他校の生徒とも学び合うことができた。
We realized that sharing our hope would build an inclusive society. From view point of SDGs and Olympic Paralympic Games,
we came up with ideas for solving global issues with other school students.

●「持続可能なオリパラ」の実現に向け、学習したことを日々の自分の生活に置き換え、自分自身でできることから実行に移していきたい。
We want to put into practice what we had learned to realize Sustainable Olympic Paralympic Games.

~Education for
Manufacturing Sustainable Development~

2019
NMDA Eco Mileage Challenge National Competition
(New Record! 2216.028 km/2)

Repeated research to improve fuel consumption
efficiency such as efficient engines, body with low
air resistance and tires that roll well, we make new
cars every year.
We also won the "Design Award" this year.

Wind Power Competition

2019 NATS EV Competition

This is the competition for
power generation using the
windmill made by participants.
We learn about power generation
technology and environmental
energy through this
competition.

This is the competition
for a 2-hour mileage on
the electric vehicles
using lead batteries.
We learn the basic
technologies of electric
vehicles.

Personality Education
~Learning with People
Learning with Community~

Co-cultivation of Local
Specialty Products

Farm Tour in Spring and Autumn

Food Education Support

Sales Training at Local Events

Special Classes by the
Ministry of Agriculture, Forestry and Fisheries

The 3rd National Agricultural High School
Agricultural College Homepage Contest
(The 2nd in Japan!!)

Through the lecture on smart agriculture
experiencing operating drones as the extra
price above, we got the opportunity to think
about the future agriculture.

We assisted the junior
high school students in
their technical home
economics classes by
showing the pears raised
by our school.

Through the sale of
agricultural products, we
fostered our knowledge of the
products and our attachment to
the community. (9 times a year)

Developing Human Resources thorough Manufacturing, Making Dreams.

Chiba Prefectural Shimofusa High School
Horticulture Department・Automotive Department・Information Processing Department



Project to send clothes to refugees

The candle night

Internship

The Paralympic game [Boccia]

Volunteer activities

International exchange

Childcare experience

Donation activities

Presentation of our activities

Chorus and ensemble with high school students in Shanghai

KAMAGAYA NISHI HIGH SCHOOL'S Activities
For A Better World 2019

高Kokubun High School
Think globally, Act locally

INTERNATIONAL UNDERSTANDING

The project of developing global human resources, which started
in 2012, will inspire students to widen our global view, through
various opportunities such as lectures by overseas-experienced
persons and cultural exchange with foreign students.

School Trip in Taiwan

ALT Class : Once a week

Accepting International Students

Kokubun has more than 10 years of experience in overseas school trips. Deepen our understanding of
different cultures, improve our international communication skills by working on positive group activities,
and by interacting with local people, including school visits. This year's scheduled visit is in Taiwan.

COMMUNITY INVOLVEMENT

Car-shaped Streamer Festival

Volunteer Work at kindergarten

Kokubun plays a role in vitalizing the local community. Joining in various community events such as
local festival, volunteer work, and interacting with nursery school children or students at special
needs schools. Kokubun takes the lead in planning a heart-warming joint concert in which
neighboring elementary schools and junior high school take part in every October.

Independence and Self-Reliance
自主・自律

Sakura Minami High School

Name Sugano, Nishimoto, Uemura, Uchiyama, Hayashi
Fukahori, Takahashi, Kataoka, Noguchi, Ishii

Exchange activity

Inba dependent school

Interaction between Sakura Minami High School and Inba dependent School several times a year.
For example, Inba dependent School opens shop at a school festival held by Sakura Minami High School, competes a sport festivals.



Tokyo University Information Science

Our school cooperates with a Tokyo university information science.
The first grader students go to the information University for a visit and are shown a program and a short animation video by university students.
Only the students of the information course visits the university, and the second grader students do give a presentation of the school excursion and gets an evaluation from university students.



International Exchange

An international exchange with the student of the sister school in Taiwan in December.
At a reception, the brass band club of our school played "pagrika" or "Love so sweet", and the Taiwanese students showed us the traditional dance of Taiwan.
In addition, I taught the art to a Taiwanese student and had lunch after that.
Finally we exchanged presents with each other and we took a ceremonial photograph and saw them off.



Volunteer

Exchange with elementary school students

Giving some instructions such as reading and writing of Chinese characters, a calculation and the feelings such as way of reading, centimeter or the liter of the clock which did biennial students and study session of Negou Elementary School in a public hall on August 27.
We did drawing in break time and I enjoyed a story and deepened interchange.



Clean the school road

The student cleaned the school road while sorting garbage. We cleaned assigned places around school and stations.
Members of beautification committee and a volunteer committee meeting collect the garbage which we collected and separate it again. We clean the places we use so that we feel comfortable.

Experience of a sports Paralympics

Playing Boccia with the instruction Tokyo Juntendo University teachers and students.

In november 20, the student of Juntendo university visited our high school. The student of the Inba dependent school interchanged together on this occasion, too. The boccia is famous as sports of the Paralympics.

Having obstacles or not, it is the sports that everybody can enjoy. About a disability sports, I was able to deepen understanding. Furthermore, our school adds boccia in a competition to perform by an athletic meet and faces not only we student but also the student of the branch school and gets close to the Paralympics sports while enjoying it and thinks that I was able to feel closer by



Activity Report

Educational for Sustainable Development

Ichihara Chuo High School



Volunteer Activities



Clean-up activity
(上総山田駅清掃)



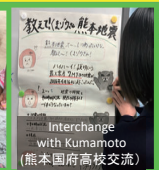
UNIQLO's sending a power of clothes project
(届けよう服のチカラプロジェクト)



Collect the caps project
(エコキャップ回収)



Make-your-future-colorful project
(クレヨン活動)



Interchange with Kumamoto
(熊本国府高校交流)



Greeting campaign
(挨拶運動)



Global Leader Program
(グローバルリーダープログラム)



GLS Program



Relationship



Visit to Bloomberg
(ブルームバーグ訪問)



Visit to TUJ
(テンブル大学訪問)



British Hills
(短期英語研修)



Study Tour in Australia
(海外語学研修)



Cultural Exchange Program



Foreign Students

Presented by Maiko Otsuka & Hikaru Takanashi

Matsudo Kokusai High School 2019

Matsukoku SDGs!!

Interaction with the people living abroad

Interaction with Indian teachers

We gave paper cranes and dorayaki to Indian teachers.

We took Indian teacher's classes of mathematics, international relations and philosophy.

School Trip to Taiwan

We visited Taipei Municipal Zhonglun High School, which is our sister school. We discussed each culture, fashion, school life and so on...

We visited some historical structures and old temples.

Studying abroad

We went to USA and Australia.

We stayed at our host-family's houses and went to the local school with our buddies.

Club activities

Cooking

Matsukoku Collaboration Dorayaki with "Matsuhisa"!!

We study sustainable cooking, such as "Chinese dishes made from familiar ingredients", "The recipe that eliminates wasted ingredients", and "The dessert made from fair trade chocolate".

Club activities

Volunteer

We participated in the donation organized by Ashinaga, which provides educational and emotional support for orphans.

Green Fund-raising at the school festival!!

The first step to be an internationally-minded person

We learn Chinese, Korean and French. Some Students have participated in the contests.

We learn about Japanese culture to know about Japanese sprits.
* Tea-ceremony
* Kabuki

First grade students participated in the English camp held at British-Hills in Fukushima.



Cambodia Study Tour

Chiba Higashi high school Matsura Chisa

Purpose

- To experience Cambodian lives
- To communicate with Cambodian students
- To learn ways to support developing countries

Current situation

- Social polarization
- Literacy rate...78%

Cambodia and Japan

We can find one thing we know well in this Cambodian bill. This shows a strong relationship between Cambodia and Japan.



Communication Learning Center

Main activities

- Literacy education
- Education for people who dropped out of usual schools
- Teaching professional skills

They support the local people in various ways

Interaction at CLC

- Observation of class
- Communication with Cambodian students
- Introducing Japanese comedy, origami, and singing a Cambodian folk song

Visiting a student's house



We visited a CLC student's house, and communicated with her and her family. She was making an effort to make her dream come true.

She wanted to be a doctor
She sometimes thought to quit CLC

Things I want to do

I want to study more about Asia and Japan
...culture, politics, languages, and histories



No.09

Chiba Higashi high school

Host Family

Clarkston high school

OKA Rinka



We accepted foreign students from Michigan,USA



DATE	PROGRAM
July.7 th	Pick them up at Nishichiba Sta.
8 th	Stroll around Tokyo (Shibuya, Harajuku, Akihabara)
9 th	Stroll around Tokyo (Asakusa, Skytree, TeamLab)
10 th -12 th	Take classes together Presentation
13 th	Farewell Party
14 th	See them off at Narita Airport

I discovered various things through this program. I learned about characteristics and advantages of Americans which I couldn't know from books and the internet alone. In addition, I comprehended American culture and reconsidered Japanese culture by communicating with them. In order to deepen International understanding, I think it is necessary to accept different cultures and disseminate our own culture.

No.10

**Reimei Green Project 2019**

The idea of our project is to integrate playing sports with various aspects in our society. Our school has started to grow a natural turf playing field to take advantage of the Tokyo Olympic and Paralympics 2020 opportunities. We hope that our school could be a center for sporting activities for everyone.



The green friendly project in Reimei high school was launched two years ago. In April 2019, 840 students participated in taking care of the grass on our school field.



In June 2019, 28,000 seeds were planted by visitors and students and during summer, the grass grew rapidly.

Collaborators

JFA Japan Football Association, Narita Airport, NPO Kick Off Narita, JFA United Nations Club (JUNES), Narita City, Local companies, and student parents.

It will be our school's 100th anniversary in 2023 and we would like to commemorate our Reimei Green Project to the occasion in three years time.

We are proud to have been involved with this project and as the Olympic and Paralympics 2020 will be held in Japan, we would like to consolidate our society through sports.

We believe in our green project as success with harmony.

We will keep this activity going on. I hope we can support sports and the people who wants to enjoy sports activities from the point of view of environmental improvement.

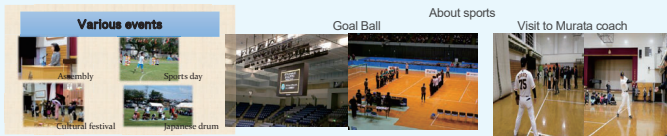
ESD Feb. 2020 in Chiba Univ.



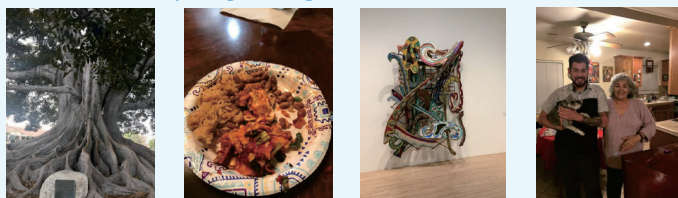
By October 2019, our school garden was covered by natural turf and the school sport festival was held on our field.

**No.11 Welcome to Chiba blind school****About Chiba blind school****Introduction of the Chiba Blind School**

We will introduce about Chiba Blind School. Chiba Blind School is a school which built for people who has visual impairment. This school has more than 100 years history. In this school, there are kindergarten which has 13 students, elementary school which has 12 students, middle school which has 8 students, high school which has 17 students and department of medicine which has 24 students.



An interchange meeting with international students at Chiba university

**Studying English in The U.S.**

No.12



Nagareyama Otakanomori High School ESD Initiative

**International Understanding Activity**

A. The National Tseng-Wen Home Economics & Commerce Vocational School Visit to Nagareyama Otakanomori HS 2019

TIME	PROGRAM	TIME	PROGRAM
8:40 -	TWWS arrival	12:45 - 13:30	Lunch with Host Siblings
8:40 - 9:05	Orientation	13:30 - 14:20	PE Class
9:05 - 10:45	Welcome Ceremony	14:30 - 15:20	English Class with Class 1-9
10:55 - 12:45	Home Economics Class	15:25 - 16:20	Music Class



Nagareyama Otakanomori students and National Tseng-Wen high school students cook boiled dumplings in home economics class and then enjoy interview games in English Class to get to know each other.

Local Area Volunteer Activities

A. "Students as Teachers" at a Local Elementary School



Nagareyama Otakanomori international class students visit a nearby elementary school and help out with their vocabulary and communication skills through fun games. This activity was broadcast in two NHK news programs.

B. JRC Exchange Program with Kashiwa Special Education School

1st semester2nd semester3rd semester

Nagareyama Otakanomori students visit a special education school, building and maintaining a mutual relationship. AIM: Students give support to people with special needs, but also to get to know each other as people of the same generation living in the same area.

The First International Interaction

Interaction with Tanshui Vocational High School in Nagareyama

- ① Tanshui's students visited our school.
- ② We supported them as Buddy.
- ③ Telling them about Japanese culture.
- ④ We had a lot of experiences with them.

Interaction with Tanshui Vocational High School in Taiwan

- ① 195 Tanshui students helped us as a Buddy.
- ② Great Stage Performance
- ③ We joined Precious School Activities.

Learn about Taiwan

- ① Making Posters.
- ② Studying not only English but also Taiwanese.
- ③ Exchanging letters

Learn about World

- ① Finding good points of many countries through making of posters.
- ② Finding the connection between Japan and World.

First, we were afraid

- ① Communicating with people from other countries.
- ② Making mistakes in English speaking

Comparison of Soil between Malaysia and Japan

~ Is Japan Really More Fertile? ~

Kisarazu High School Eita Hatanaka, Nagisa Watanabe, Yuuki Abe, Aoi Koizumi, Kanna Yahara

Motivation and Purpose

We were very surprised to learn that there are a lot of big trees in Malaysian rainforests but the soil is not very fertile. Therefore, we wanted to know if it was true or not, and we conducted three experiments on capacities of soil in Japan and Malaysia, and compared the results.

Method

I Soil collection and adjustment

- Collection method
 - Collect the soil of these places.
 - (Japan) ① bamboo forest ② forest ③ sandy beach (for comparative experiment)
 - (Malaysia) ④ center of a forest ⑤ near a river in a forest ⑥ along a road near a forest
- Adjustment method
 - Dry collected soil in the shade for more than a week, and sieve it.

II Experimental method

Experiment 1

~Water absorption~

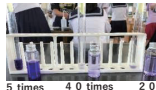
1. Mix the soil with purified water and filter with tissue paper and funnel.
2. Measure the amount of water coming out of the funnel to measure the water absorption.



Experiment 2

~Nutrient Adsorption~

1. Mix soil and colored water in a beaker and filter with funnel and filter paper.
2. Compare the color of the filtered solution and the colored solution diluted to 5 times, 10 times, 20 times, 40 times, and 80 times to measure how much of colored water is adsorbed to the soil.



※ In this experiment, we used colored water as a nutrient.

Experiment 3

~Buffer capacity~

1. Mix the soil and purified water and measure pH of the supernatant.
2. Add 1ml of HCl and measure pH.
3. Repeat step 2 20 times, and measure the change of pH.
4. Do the same with NaOH.



Consideration

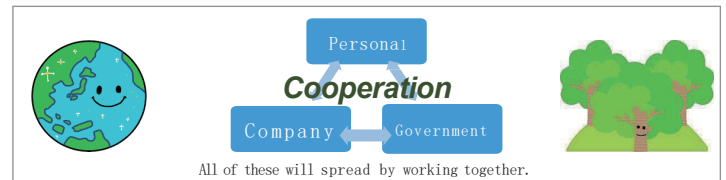
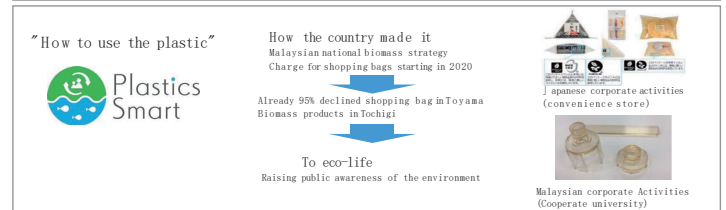
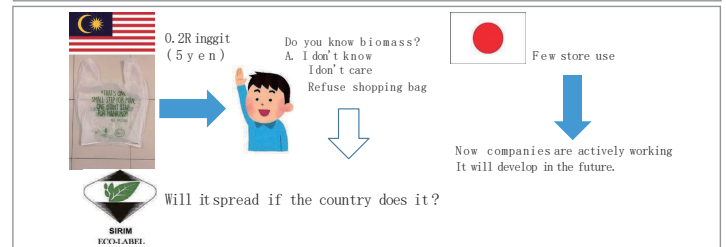
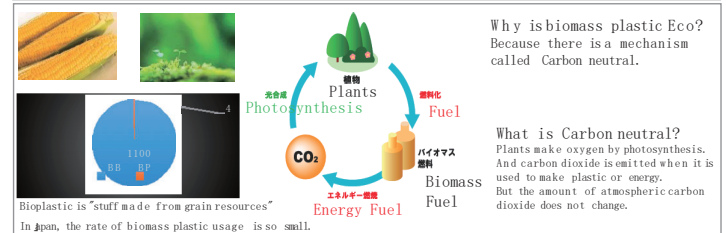
- ◆ From these experiments, it was found that the hypothesis that "fertile soil means one with high capacities in all of three" was wrong. For example, one soil has low water absorption and high nutrient adsorption, while another has low buffer capacities with acid and high buffer capacities with alkalinity. Therefore, it is considered that each soil has its unique strength.
- ◆ It was found that water absorption and buffer capacity of the soil in Japan are higher than that in Malaysia, and the hypothesis that "the soil of the rainforest has high capacities in all of three" was wrong. Therefore, only the soil doesn't determine the size or amount of plants and there may be other factors of a lot of big trees in Malaysia.

Our Next Task

- ◆ The difference in temperature and humidity between Malaysia and Japan may have influenced the results. In order to find the effects of temperature and humidity, these experiments should be conducted in another season in Japan.
- ◆ It is necessary to conduct these experiments with different types of soils such as black soil, brown forest soil, and red and yellow soil.

~ What Is Biomass Plastic? ~

Kisarazu High School Erika Shina Nonoka Sato Kai Harukawa



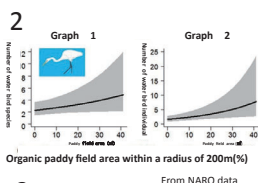
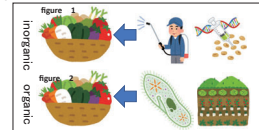
The Current Situation and Future on Organic Farming

Kaede Ishikawa Kocho Anri Arai Natsuki Masaharu Matsushita

Kisarazu high school

Different point

- 1 Organic farming is the production of crops using natural soil. Figure1, Chemicals are used after DNA of crops are modified. It's not organic. Figure2, microorganisms are used in natural soil without chemicals. It's organic.



Living thing	Comparison of cultivation method	Influence of individual control
Long-legs spider genus	Normal<Organic	Effect
madder genus	Normal<Organic	Effect
Leopard frog genus	Normal<Organic	Effect
Japanese tree frog genus	Reduce of Agrochemicals<Normal	Effect
Loach family	Nothing	Effect
Water bird	Areas with more organically grown paddy fields are more common	No effect
Land bird	Nothing	No effect

3 Malaysia price

Kind	Normal tomato	Organic tomato
Average	0.85RM/100g	1.26RM/1kg
Group	Without my Organic	With my Organic

Table 3 Japan price

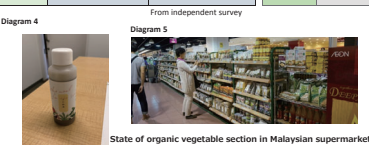
Kind	Normal tomato	Organic tomato
Average	¥75/100g	¥101/100g
Group	Without organic JAS certification	With organic JAS certification



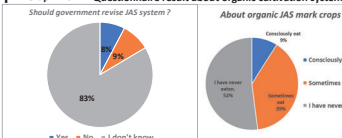
In Malaysia, the organic vegetable certification system, called my organic was stated. Farmers who obtain this certification system will be given incentives, and they are allowed to attach a national certification mark on their products.

In Japan, the Ministry of Agriculture uses a system where only organic products certified as "organic JAS standard" can be sold as organic vegetables.

According to the tables 2 and 3. Japan and Malaysia organic crops price are higher than normal crops.



4 Graph 3 Questionnaire result about organic cultivation system



Graph 4

Our opinion

Customers can choose what they want to buy. According to the graphs No. 3-6. People hadn't understood organic systems in 9 years ago but half people could understand and buy it in 2 years ago. Why the other people didn't buy organic crops? 65% people said "No place to sell" and 25% people said "High price". The situation don't enough protect customers rights about choice so Japanese government must make a new system about organic and spread another choice to choose organic crops.

How to Recycle Food Waste Efficiently

Japan and Malaysia Were Recycling Food Waste in an Efficient Way

Kisarazu High School

Kasori Takuma

Unoki Yuusuke

Takaura Haruka

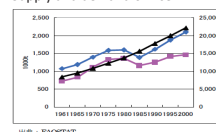
Ito Riko

Malaysia



This red soil is Ratol. The nourishment in the soil is lost when microorganism works too actively. Plants are difficult to grow in the soil.

Supply and demand of rice



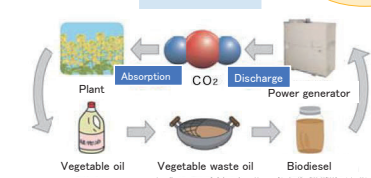
(URL : FRACFEAT)

Population and food production continue to increase

Food waste has also increased!

- Food waste are reused to make biogas.
- Biodiesel does not emit CO₂ as biofuels.

Efforts



- Using used cooking oil collected from residential community
- Convert used cooking oil into biodiesel
- Biodiesel to be used as fuel for machinery operation at biorefinery that plants and technologies that produce biofuels and from biomass, a renewable resource complex and to be sold
- Raising awareness for community on the good of collecting used cooking oil

Questions we asked in Malaysia...

Q1 : Are you doing recycling of food waste, etc?

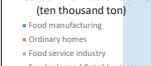
A : Each home uses compost to have a recycle. In addition, we're making some biogas, biodiesel etc.

Q2 : Where can you use the HDM system? Is it in Malaysia?

A : Although there are bacteria that make biogas, I don't know if it can be used in HDM system.

Present Japan

Breakdown of waste volume (ten thousand ton)

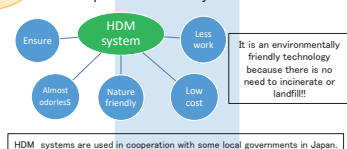


- The food loss scraps for 1,770 large trucks (10 tons) everyday
- The quantity of food loss per year is 51 kg
- About half of the food loss comes from home.

Food waste from home is easier to reduce

We need a system to collect and reduce household garbage!

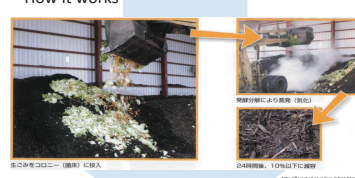
Development of HDM system



HDM systems are used in cooperation with some local governments in Japan.

The HDM system can solve the food waste problem in Malaysia. Also, by using the fertilizer made here without using chemical fertilizer, you can prevent the land from getting thinner.

How it works



Conclusion

HDM systems and biofuels are not popular. It is necessary to recycle food waste in a manner suitable for each location, and to improve the global environment.

What Can We Do to Achieve SDGs?

Kotoha Isobe, Neneka Satomi, Moka Tanaka (Kisarazu High School)



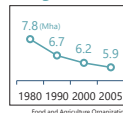
Introduction | What is SDGs?



SDGs is a common goal agreed with by the United Nation in 2015 and should be achieved by 2030.

Survey results | Mangroves and SDGs

Mangroves area changes (in Asia)



Mangroves are now decreasing. Cutting down to make shrimp farms is a major cause of reduced mangrove forests.

Relationships between mangroves and SDGs

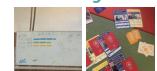
1. POVERTY	If mangroves become a tourist spot, we can hire a lot of poor people.
4. QUALITY EDUCATION	Future generations can understand the importance of nature.
7. ENERGY AND CLIMATE ACTION	Mangrove forest soil contains a lot of biomass, which is sustainable energy.
8. DECENT WORK AND ECONOMIC GROWTH	In the mangrove forests, "Eco Shrimp", which corresponds to fair trade is produced.
13. CLIMATE ACTION	Mangroves absorb more carbon dioxide than other forests.
14. LIFE UNDER WATER	Mangrove forests are home to many fish, plankton and crabs.
15. LIFE ON LAND	Mangrove forests are home to many fish, plankton and crabs.

The importance of mangroves

Protecting mangroves forests can help protect the environment, develop the economy, solve energy problems, and improve education. Mangroves play an important role in realizing a sustainable society.

Action | Our school's efforts

SDGs card game



Those who don't know SDGs at all or who have basic knowledge can learn SDGs and we

could simulate our imaginary world by using the knowledge based on the game.

Tree planting



It was hard for us to plant trees in the mud. However, we realized that each person's actions could restore mangrove forests, which results in rich nature.

Action | What can we do?

Fair trade mark



"Fair trade" is a system where a producer will get enough money as they work for their lives.

Rain forest alliance mark



"Rain forest alliance" is made for protecting creature's diversity and sustainable life for people.

Sea eco label



"Sea eco label" is promoting ecological fishing.

Others



Buying products with these marks is one way to achieve SDGs goals!

Conclusion | To achieve the SDGs

To achieve SDGs, we have three steps :

- To know it
 - To spread it
 - To take an action on it
- How about trying to start with what we can do to make our society sustainable?

What Should We Do to Protect Satoyama ?

Kisarazu High School Yoshida Saki Haga Azusa Iwamoto Yui Yasuda Akane Watanabe Shihou

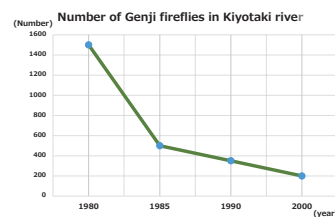
1. What Is Satoyama?

These picture were taken in Satoyama called Sinomori



- People preserve nature in Satoyama.
- Various kinds of living thing live there.
- People grow rice and vegetable in Sinomori.

2. The Detrimental Effects of Satoyama Devastation

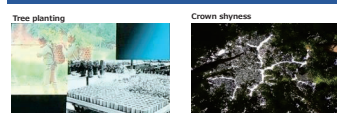


- Habitats of creatures in satoyama has disappeared.
- The number of creatures in satoyama has been decreasing.

Conclusion

Satoyama is a place where a variety of creatures can live. But Satoyama has been devastated and is in bad condition. Throuh experience in Malasia, we need to increase the actives through which people are willing to protect Satoyama.

3. People Conserve Forest at FRIM



- People plant trees
- Various kinds of living thing can live there
- People hold an event which everyone can take part in
- Young people are interested in FRIM

4. What Should We Do to Protect Satoyama ?



- Volunteers cut unnecessary trees and make furniture and tableware in Kagakunosato in Ibaraki.
- Invite student from the capital metropolitan area and carry out a farming experience in Iwate(NPO corporation).

Color Blindness

Which picture do you think is the true color of the picture?

I. Color blindness

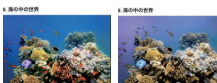
Do you know about color blindness? Color blindness is a type of vision impairment. 1 in 20 men are affected by it. chromosome abnormalities on the X chromosome cause color blindness. Since men have only one X chromosome, they are more susceptible to color blindness.

Most people have three kinds of cones in their eyes, red, green, and blue. They are made from protein. We can see color when the three cones interact with each other. However, some cones in a person who has color blindness are weaker than others.



II. The worlds of color blindness

1.Under the Sea



On the left is a normal picture. The right one shows how those with color blindness see it. Both are beautiful, but you may find the right one shows blue less distinctly.

2.Meats



Here too, the left photo is a normal picture. Maybe you are surprised at the difference of the

two. A person who has color blindness can't judge whether meat is already cooked or not.

III. Treatment and measures

a) Treatment

Nowadays, many doctors are looking for a treatment for this impairment. The most popular method is to use IPS cells. However, they are not yet useful.

b) Measures

Although there are no breakthrough treatments, some measures are used to help people who have color blindness. One of those is a function of iPhones called color filter.

The following is the procedure for setting up color filter.

Settings>Display & Brightness>Color filters=>choose filter

The screen looks like this;



Another example is using a pair of special glasses. These glasses use a polarizing filter. Polarizing filter adjusts the balance of color seen.

However, these are very expensive. So, not everyone can use these glasses.



Cerebral Abscess

Higashikatsushika Highschool
Haruka Araki

Motivation

My 7-year-old brother caused cerebral abscess last June. I wanted to know about it more .

What is it?

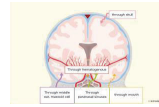
Cerebral abscess is one of the rarely disease. The mortality of this disease is about 25%. The bacteria enter the brain and form pus. It can be divided into two types. Direct and hematogenous. You can see from the graph, my brother's one was from hematogenous. The symptoms are fever, nausea, headache, and convulsion.

How to cure ?

Administration of antibiotics of bacteria is a way to cure cerebral abscess. If the disease are big, surgery to drainage the pus is performed. From this surgery we can identify the name of bacteria. Hospitalization period is about 8 weeks.

Risks

Sequelae depends on the location of the disease. Epilepsy cause highly possible.



Place of my brothers disease



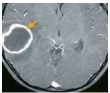
My brother's one is at temporal lobe. It affects on auditory stimulus

The diagnosis

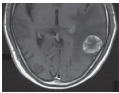
The differentiation of cerebral abscess
It is difficult to confirm the cerebral abscess. It is because cerebral abscess is similar to other brain diseases like brain tumor and Glioma.
A big difference is because of biological reaction, cerebral abscess cause heat.

Conclusion

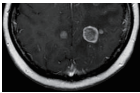
Cerebral abscess can cure by antibiotics of bacteria. Even after healing, after effects will remain highly possible.



Cerebral abscess



glioma



Brain tumor

Save Borneo from the deforestation

~Palm Oil and RSPO~

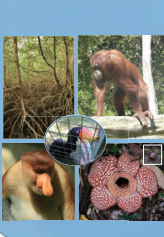
YAMAUCHI Mikoto, SHISHIDO Yu, TANAKA Hinata Tokyo Metropolitan High School of Science and Technology

Overview

We visited Malaysian Borneo from March 26 to 31 to do fieldwork. The purposes of this fieldwork are as follows.
1. To observe unique creatures living in tropical.
2. To understand that Borneo's severe environment issues.
3. To inform the present condition of Borneo to many people in Japan.

What is Borneo like?

Borneo is the third largest island in the world lies near the equator. It is said to be the place where the biggest tropical rainforest remains in the world. That's because Borneo escaped development. Thus, more than 4,000 species of plants and creatures have been living there. However, Borneo's nature have been decreasing over the past few years due to advancing deforestation.

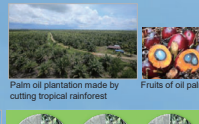


Observation

We could see wild proboscis monkeys and rafflesias.
In mangrove forest, we were able to see many wild proboscis monkeys on our boat. They have large nose and stomach and live only in Borneo.
In high altitude mountains, we were able to see Rafflesias. It is a plant that parasites on grape roots and it blooms only three days in two years.
In Lok Kawi Wildlife Park, we saw Orangutans. They only lives in the rich tropical rainforest of Borneo and Sumatra. But now, as deforestation progressed, the number of orangutans has diminished.

Environmental problems in Borneo and their solutions

Cutting tropical rainforest to produce palm oil
Borneo has many oil palm plantations. Vegetable oil is made from palm oil and it is used all over the world. Many products such as cosmetics, snacks and cup noodles contain palm oil. In Japan, it is known as "Vegetable Oil", therefore many people don't know about palm oil. This is a big problem.
85% of palm oil is made in Malaysia and Indonesia and more than half of the Borneo's forest are cut down for palm tree plantation. It is said that Orangutans have lost 80% of their homes.



We planted 300 mangroves

We took part in "Mangrove Rehabilitation Project" projected by Sabah Forestry Department (SFD) in Malaysia and International Society for Mangrove Ecosystems (ISME). Then we planted 300 mangroves for mangrove revival.

Eco-friendly mark "RSPO"

In 2004, "RSPO" (Roundtable on Sustainable Palm Oil) was established by nonprofit organization, in response to the world's needs for sustainable palm oil. Some products have "RSPO certification mark" on it. These products were made with consideration for the environment and society. If you buy these products, you can stop deforestation and child labor. However many Japanese people don't know about RSPO and products with RSPO certification mark. Also, there are fewer RSPO products sold in Japan compared to western countries.



Activities after coming back to Japan

Announced environmental issues for children

Edogawa Environment Fair

We delivered the present environment issue at the environmental fair. Children learned about Borneo with fun through our presentation and quizzes. All children actively participated.

Ueno Zoo Event

We took part in the event sponsored by WWF JAPAN and Ueno Zoo. We could talk about Borneo and palm oil to many people who visited Ueno Zoo. So many people were able to learn about palm oil.



Conclusion • Prospect

Our casual life have been damaging our earth

Through this fieldwork, we good word choice severe deforestation in Borneo. We learned that cause is also in Japanese people too. If we continue current life, not only local people but also people around the world will have adverse effects. We think that people have to change their life consciousness to solve environment issues. For example, to choose eco-friendly products. We are giving presentations so that many people can know about this issues. Let's review our lives together for the future.

Acknowledgements

We would like to thank the following contributors Baba Shigeyuki, Katsuko Mito from International Society for Mangrove Ecosystems (ISME), Joseph Tangah from Sabah Forestry Department.

References

[1] Ministry of the Environment in Japan (2011). Consideration of sustainability of verification and richness [2] Malaysia National Tourism Organization official web site. <http://www.tourismmalaysia.gov.my> [3] World Wide Fund for Nature (WWF), What is the Vegetable Oil? - palm_oil.pdf

SUPPRESS MYOPIA PROGRESS WITH SUNLIGHT

Akemi SATO
Higashi Katsushika High School

1.Motivation

Myopia is a very familiar condition. However, myopia can lead to blindness. So, I would like to find out more about myopia, and think about ways to control it.

2.How myopia works



Fig.1 a cross section and a schematic diagram of a normal eye.

The upper figure shows a cross section and a schematic diagram of a normal eye.



Fig.2 a schematic diagram of myopia

It is said that there are two types of myopia.

The upper left figure is axial myopia, the upper right is refractive myopia.

The details are unclear, but most myopia is due to axial myopia.



Fig.3 use convex lens

The convex lens has the function of making the focal point far away, so if you put glasses or contact lenses in front of your eyes, the retina will come into focus.

3.Causes of myopia

Although it is not clear yet, myopia is thought to be caused by a complex mix of genetic and environmental factors.

4.Treatment of myopia with sunlight

There are a variety of treatments for myopia, one of which is suppression with sunlight.

1)What does sunlight mean?

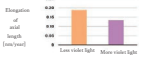
Sunlight contains light with a wavelength of 360-400nm called violet light.

When this violet light enters the eye, it is found that genes thought to suppress the progression of myopia are activated.



2)Violet light effect

Comparison of changes in axial length



Keio University's research team found that children who actively consume violet light had less axial spread and less myopia than children who did not.

3)How to take in violet light effectively

Violet light is abundant in sunlight but often not in room lights.



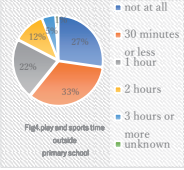
We should consciously go outdoors

★Cloudy or shaded conditions are also effective

★Aim for about 2 hours or more a day

★It's especially effective before children become myopic

4)The current situation of primary school students



The average time spent outside of primary school was 44.8 minutes. It was less than the 2 hours that is a guide. We should go out actively.

5)World initiatives

In Japan, there are many children who don't have enough time for outdoor activities.

This may be a difficult problem to change significantly due to changes in life styles, etc. However, Taiwan is working to reduce myopia throughout the country.

Approximately 80% of those under the age of 20 have myopia, and the government of Taiwan thought that measures to prevent myopia should be taken from childhood and began a project to increase children's outdoor activities in 2011.

In particular...

●Mandatory to hold P.E. classes outdoors for 150 minutes per week

●Outdoor activities are recommended in other classes such as science

●A light sensor is attached to the neck of children to manage the light and time taken at school



Fig.4(Percentage of primary school students with naked-eye vision of 0.8 or less)

As a result, 7 years after the project started, the proportion of primary schoolchildren with naked-eye right of less than 0.8 decreased from 50% to 48.5%.

5.Consideration

Through this research, I was able to deepen my understanding of myopia and how to use sunlight to suppress myopia. Even primary school students have less than 2 hours to a day go outside, so I thought we should all make more effort to go outside.

References

<https://www.sports.go.jp/ja/healthcare/press/2019/09/09/01/>

<https://healthcare.jikei-u.ac.jp/healthcare/article/2-4.html>

<https://www.who.int/news-room/fact-sheets/detail/myopia>

Iriomote Island

— A Good and Bad sides —

TAKAKO Satsuki, ICHIKAWA Haruna, ASAKAWA Hana Tokyo Metropolitan High School of Science and Technology

Purpose

We went to Iriomote Island from July 25 to 29 in 2019. We were supported by the Tropical Biosphere Research Center University of the Ryukyus. We went to learn about the ecosystem of Iriomote Island. For example : biodiversity, animal trafficking, and about the garbage issue. We introduce these issues.



Unique Ecology of Mangrove

Seven kinds of mangroves grow in Iriomote Island

Mangroves are plants which can inhabit brackish water. All kinds of Japanese mangroves grow in Iriomote Island. Mangroves have different habitats depending on their salinity (Right figure).
The soil of mangrove forests are soft. Mangroves have unique roots, because mangroves need to stand on unstable soil (figure below).
Distribution of Mangroves and associate mangroves



Mangrove's roots are developed for breathing

In brackish waters, at high tide, whole trees sink in the water and become starved of oxygen. However, mangroves have adapted its roots. Some types of roots jump out of the ground and absorb oxygen. We saw cross section of roots have many cracks (Right figure). These holes are thought as spaces to store air. We could see the unique structures of the plants in brackish water area.

Ecosystems grown by mangrove forests

The roots are intricate and become home to many animals. For this reason, many creatures inhabit.
We could observe the *Uca arcuata*, *Terrestrial palustris*, and the *Geloina eros*.

Mangrove forests are high in organic matter

Fallen leaves are not easily oxidized by brackish water. Thus, there is abundant food for living things. If mangrove forests are cut down, large amounts of carbon dioxide would be released in the air.



Environment Issues

Human activity has reduced the number of animals.

The number of Iriomote wild cats and Crested serpent eagles are decreasing due to roadkill (Table 1).

Iriomote Island is strict on separating garbage, but so many kinds of garbage are left on the beaches without being separated (Fig.1). Iriomote Island may be registered as a World Heritage Site. It needs to cultivate nature for building facilities for visitors (Fig.2). However, there are some islanders who want to protect nature. There are many problems to solve to keep protecting nature.

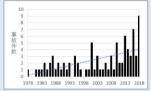


Table 1. Number of Iriomote wildcat accidents

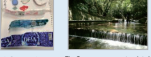


Fig.1. drifting garbage



Fig.2. upstream water intake

Attempts for protecting environment

There are some efforts like, pulling up the weeds to notice animals easier, making gutters, to protect small animals, and picking up garbage in the island.

There are also some attempts for it to be registered as a World Heritage Site too. (Fig.3-5)



Summary and Outlook

Through our trip, we learned about the unique survival strategies of mangrove plants and the ecology of various living things surrounding them. We were able to learn about many things that could not be understood just by reading about them in a book. On the other hand, we learned that there are many problems that threaten the environment where they live. If Iriomote Island is registered as a World Heritage Site in the future, the number of tourists will increase and they surely destroy nature. However, we have witnessed that solving environmental problems is not easy, due to the fact that the lives of locals are supported by the tourism industry.

First of all, considering what we can do to protect the environment, it is important to get as many people as possible aware of the current situation of Iriomote Island. We want to change our lifestyles little by little, knowing that everyone, including us, may be involved in the destruction of nature.

Acknowledgements

We would like to thank the following persons from Tropical Biosphere Research Center, University of the Ryukyus for their great help.

[1] Shigeyuki Baba, Professor Emeritus
[2] Shin Watanabe, Associate Professor

References

[1] Makoto Yokotsuka (2011) Field guide of Iriomote island : Jitsugyo no Nihon Sha, Ltd
[2] Shigeki Yasuma (2011) Nature tour Iriomote island : Toka University Press
[3] Iriomote Wildlife Conservation Center (IWCC), The crisis approaching the Iriomote wild cats : <http://iwcva.liv.ac.jp/jm/kakiten>

The Effect on The Different Extraction Time of Kawa Daun Beverage (Coffea canephora) Which Use Ultrasonic Bath Towards Components of Bioactive Extract

 IPB University
Ifwarisan Defri and Norma Nuraina

BACKGROUND



SHORT HISTORY



RESULT

Treatments	Yields (%)	Total polyphenols (mg GAE/g)	Antioxidant activity (%)	Caffeine (%)
A (Extraction 10')	22.77 ± 1.97 a	153.611 ± 8.19 a	14.61 ± 0.51 a	0.15 ± 0.40 a
B (Extraction 15')	25.12 ± 5.49 ab	160.833 ± 6.67 a	20.47 ± 1.48 b	0.17 ± 0.46 a
C (Extraction 20')	28.60 ± 4.96 ab	247.361 ± 8.84 b	24.61 ± 1.28 c	0.21 ± 0.45 a
D (Extraction 25')	32.19 ± 5.21 b	247.222 ± 9.77 b	24.15 ± 1.56 c	0.23 ± 0.35 ab
E (Extraction 30')	33.82 ± 3.82 b	243.194 ± 6.85 b	23.70 ± 1.64 c	0.33 ± 1.02 b

CONCLUSION

The best extraction time of spent coffee leaves which use ultrasonic bath was treatment C (extraction time of 20 minutes) with yield (28.60 %), total polyphenols (247.361 mgGAE/g), antioxidants activities (24.61%), caffeine contents (0.21%) and residual solvents (0.00%).



Principle mechanism of Astrolabe

1. The principle

Stereoscopic projection is greatly involved in astrolabe. Stereoscopic projection is one of the methods to project spherical surfaces to a plane. This method doesn't project the length correctly but projects the angle right. This method is used in astrolabe (fig.1) by projecting altitudes on celestial sphere or positions of stars into earth's equatorial plane.



2. Roles and drafting methods of each parts

Astrolabe is composed of some parts named parts, tympan, rete, rule, alidade, and used by turning rule, rete, and alidade.

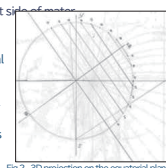
Mater

It is the foundation of astrolabe. On the front side, there are scales of angles and time. On the back side there are scales of angles, ecliptic, calendar and the shadow square. Shadow square is a square that can calculate the trigonometric function.

Tympan

Curves of altitudes and azimuth are projected into a plane looking up from where the southern hemisphere is carved. So, the east and west are reversed. Tympan are stored on the front side of the astrolabe. This is the side view of projecting curves of altitude and azimuth into the equatorial plane. (Fig.2)

We can determine by this figure the diameter and center of the circle to be drawn. The scale of tropic is of capricorn is projected to be become the diameter of Astrolabe.



Rete

A plate openworked. Ecliptic and equatorial coordinates of stars projected into equatorial plane are drawn. Motion of turning it once corresponds to a day.

Rule

Needle on the tympan and rete.

SAKAMOTO Marina
Chiba Prefectural Yakuendai High School
Chemical club

Aridade

The needle on the back of Martell. It is used to check the altitude of the sun and stars, and to check the solar longitude.



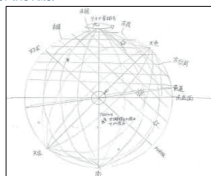
3. How to use an Astrolabe

Calculate the time from altitude of the sun

Astrolabe can determine the time based on the position of the sun.

Calculate the time when the sun rises on any day

Astrolabe can know the time when the sun rises at the position of the rule.



Calculate the time when the stellar rises on any day

Astrolabe can tell when a star is rising by examining the longitude and stars.

4. Challenges point and prospects

I have understood the approximate ideal by making it. But the accuracy of the Astrolabe is not high so I should upgrade it. Also, it is unclear why the figure that the east and west have represent, so more research is needed.

References

- https://www.kyuhaku.jp 'Astrolabe'
- Lominaeox.com 'Drafting and making astrolabe'
- asait.world.coacan.jp 'Astrolabe'
- lv1unweb.fc2.com 'About Astrolabe'

EVALUATION OF LINEAR MODELS AND LINEAR MIXED MODELS TO PREDICT THE EFFECTS OF ANTIMICROBIAL PEPTIDES ON BROILER PERFORMANCE

Mohammad Miftakhus Sholikin

Introduction

The meta-analysis used to find out the general conclusions from a case. In nutrition and feed science, meta-analysis used to quantify the dose or level of addition of feed additive. Meta-analysis has much variety based on fundamental methods, one of which is a Linear Mixed Model (LMM). LMM developed from Linear Model (LM). LMM consists of fixed effects and random effects. This study aims to evaluate linear models and linear mixed models that were built based on the database of effect Antimicrobial Peptide (AMP) on broiler performance.

Material and Methods

Data Collection

Data obtained from various literature and the main topic of literature was "Effect of AMP on broiler performance".

Build and Evaluate the Model

The model was built using R programming language version 3.6.0, library("nlme"), and library("lme4"), model shown in Table 1.

Conclusion

It can be concluded, the database can be described well using a linear mixed model (model 9) dan linear model (model 2).

Results and Discussion

BIC used to select the best model from a limited set of models. Model 9 preferred for body weight, average daily gain, and daily feed intake. Meanwhile, model 2 is more intended for the feed conversion ratio. The Bayesian information criteria are in Table 2.

Table 1. Syntax formula of the linear model and linear mixed model

Model	Syntax formula	Type
1	y ~ ln(y ~ level, data=data)	LM
2	y ~ ln(y ~ level + peptide, data=data)	LM
3	y ~ ln(y ~ level + peptide + treatment, data=data)	LM
4	y ~ ln(y ~ level + peptide + treatment + broiler, data=data)	LM
5	y ~ ln(y ~ level + peptide + treatment + broiler + study, data=data)	LM
6	y ~ ln(y ~ level + (1 peptide), data=data)	LMM
7	y ~ ln(y ~ level + (1 peptide) + (1 treatment), data=data)	LMM
8	y ~ ln(y ~ level + (1 peptide) + (1 treatment) + (1 broiler), data=data)	LMM
9	y ~ ln(y ~ level + (1 peptide) + (1 treatment) + (1 broiler) + (1 study), data=data)	LMM
10	y ~ ln(y ~ level + (1 peptide) + (1 treatment) + (1 broiler) + (1 study) + (1 broiler:treatment:study), data=data)	LMM

LM, linear model; LMM, linear mixed model.

Table 2. Bayesian Information Criterion Values

Model	BIC			
	bw	adg	dft	fcf
1	458,71	234,87	237,66	-33,79
2	443,53	222,21	223,90	-62,59
3	443,53	222,21	223,90	-62,59
4	441,45	218,03	211,98	-58,79
5	429,58	197,24	189,76	-60,82
6	426,76	216,33	222,18	-43,93
7	430,37	219,94	225,79	-40,32
8	432,33	220,51	216,12	-36,72
9	392,71	180,93	174,36	-62,47
10	396,20	184,38	176,28	-62,35

BIC, Bayesian Information Criterion; bw, body weight (g/bird); adg, average daily gain (g/bird/d); dft, average feed intake (g/bird/d); fcf, feed conversion ratio.

Pearson correlation value for the model built were 0.98, 0.99, and 0.98, respectively (Table 3). This means that the actual value strongly correlated with the predicted value (model 9).

Table 3. Selected model and Pearson correlation value (actual vs. predictive)

Model	bw	adg	dft	fcf
1	0.98	0.99	0.98	0.98
2	0.98	0.99	0.98	0.98
3	0.98	0.99	0.98	0.98
4	0.98	0.99	0.98	0.98
5	0.98	0.99	0.98	0.98
6	0.98	0.99	0.98	0.98
7	0.98	0.99	0.98	0.98
8	0.98	0.99	0.98	0.98
9	0.98	0.99	0.98	0.98
10	0.98	0.99	0.98	0.98

bw, body weight (g/bird); adg, average daily gain (g/bird/d); dft, average feed intake (g/bird/d); fcf, feed conversion ratio.

Creating of Biodegradable Fiber Reinforced Plastic

Tokyo Metropolitan Tama High School of Science and Technology Wada Momoka / Imamichi Teru

Abstract

Plastics are a source of serious environmental problems.

What is Biodegradable Fiber Reinforced Plastic? Plastic that is decomposed by microorganisms, is friendly to nature, but weaker than plastic petroleum. For example : casein plastic.

We thought that a strong biodegradable fiber reinforced plastic could be made by combining casein plastic and natural fibers.

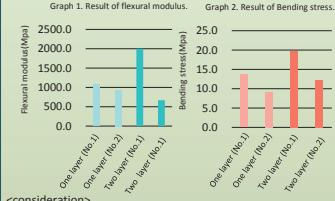
We aimed to create strong biodegradable plastics.

Experiment 1

Experiment 1, a loofah fiber was used as a natural fiber.

- I. Casein was removed from the milk.
- II. Casein was spread on the loofah fiber.
- III. One layer and two layers were each formed (No.1) (No.2).
- IV. It was Pressed with a vise. It was molded through heating in a microwave oven. This steps was repeated.
- V. The three-point bending strength was measured with a universal testing machine. (SHIMADZU EZ-LX)

<Result>



<consideration>

- ◆ The result was higher for two layers (No.1) than for one layer. We think this is due to an increase in loofah fibers.
- ◆ The bending elastic modulus and bending stress of the two layers (No.2) were very low. This is probably because casein had many gaps.
- ◆ The thickness could not be less than 1mm. This is probably due to the thick loofah fiber.
- ◆ The strength test was performed twice for both layers, but the result is varied. From this, we consider that we may not have done enough tests.

Experiment 2

Experiment 2 okra fibers were used. To create a biodegradable plastic thinner, lighter and stronger than plastic made from loofah fibers.

- I. The okra was boiled with sodium hydroxide to removed its fiber.
- II. The fiber was formed into paper.
- III. Casein was removed from the milk as in Experiment 1.
- IV. Test pieces were prepared in the same method as in Experiment 1.



<Result>

- ◆ When it was made into paper, there was a part that did not peel off well and was torn.
- ◆ It spread too thinly with pressure in a vise.
- ◆ When the test piece was dried in the refrigerator, it broken with just a touch.
- ◆ Could not be successful combined with casein.
- <consideration>
- ◆ It is considered that the cause of the breakage of the fibers when formed into paper is that the fibers are unbalanced to overlap each other.
- ◆ The connection between the fibers of the okra was weak, so it was spread too thinly and broken.
- ◆ The gap between the fibers was not uniform. Therefore, it is considered that the degree of casein penetration was unbalanced.

Conclusion

- ◆ Biodegradable fiber reinforced plastic can be made by combining natural fiber.
- ◆ It was found that by adding fibers and increasing the amount we could made strong biodegradable plastic.

Future plan

- ◆ We will search for the biodegradability of the biodegradable plastic.
- ◆ Increase the number of strength tests of the biodegradable fiber reinforced plastic made of loofah fiber.
- ◆ Perform not only a three-point bending test but also an impact test.

Sources

・ JIS K 7012 繊維強化プラスチック—曲げ特性の求め方 ・ JIS K 7016 繊維強化プラスチック—試験法のやり方 ・ JIS K 7017 炭素繊維強化プラスチックの曲げ試験方法

Inspection of the Mpemba effect

Chiba higashi high school
Gen Takahashi Koki Fujishiro

The Mpemba Effect is a phenomenon that high temperature liquid coagulates earlier than liquid of the normal temperature. That was paid attention all over the world in nineteen sixty-three by Erast B Mpemba. When he went to the school, he learned how to make the ice cream. In the school, students they waited until it is normal temperature after boiling milk, then, put into the refrigerator. One day, he put hot milk into the refrigerator. Then it freeze fastest all of the milk. After that, he confirmed that this phenomenon is happen by experimentation. But we still don't know why this effect occurs, and, some people disagreed with this idea. So, we investigated of this phenomenon.

Experimentation [1] We investigated whether this effect occurs.

Put 70 degrees Celsius water and 25 degrees Celsius water into -20 degrees Celsius freezing mixture, and measured until it freeze.

<way>

We prepare two polyethylene cases (A, B) (picture 1), and

B into hot water until it became 70 degrees Celsius (picture 2).

After that, we put these cases into -20 degrees Celsius freezing mixture and measured every ten second (picture3).

<result>

In the ten times measure, two times happened this effect.

Experimentation [2] We investigated that why this effect occurs.

Experimentation [2]-① We suspect that 70 degrees Celsius water temperature became lower than 25 degrees Celsius water before freeze. So we measured until they became 0.1 degrees Celsius.

<way>

Use 0.1 degrees Celsius freezing mixture instead of -20 degrees Celsius freezing mixture and did Experimentation [1].

<result>

Always 70 degrees Celsius water temperature is higher than 25degrees temperature water.

Experimentation [2]-② We suspect that if the cases specific heat becoming lower, water can cool faster, so 70 degrees Celsius water became lower than 25 degrees Celsius water until they became 0.1 degrees Celsius.

<way>

Use examiners made by glass instead of polystyrene cases and did Experimentation [2]-①.

<result>

In the cases, always 70 degrees Celsius water temperature is higher than 25 degrees Celsius water.

Experimentation [2]-③ We suspect that if the cases specific heat becoming lower, water can cool faster, so 70 degrees Celsius water became lower than 25 degrees Celsius water until it freezes.

<way>

Use examiners made by glass instead of polystyrene cases and did Experimentation [1].

<result>

In the cases, always 25degrees temperature water freezes faster than 70 degrees Celsius water.

<consideration>

This effect was happening by 70 degrees Celsius water super cooling short when specific heat is higher. So, I think why this happen. Because Water freeze from super cooling, big clusters need. Low temperature water has many clusters. So a few clusters are in 70 degrees Celsius water. And in high specific heat case, water is cool by lower. Because this, clusters become more rater, and it is easy to become big clusters. So this phenomenon is happen.

This effect is appearing when the septic heat is high and two water's temperature difference is big.

->We research high specific heat or big temperature difference make this effect.

<literature cited>

Cool? Physics Education 1969(May,Vol4)pp172-175 / Consideration about freezing mixture Tomoya Yuzuki

/Physics to understand Norikata Otuka



Fig.1 The periodic table of the elements
<https://www.sagepub.com/elements/characteristics/index.html>



Fig.2 A bismuth crystal



Fig.3 Experiment①-1



Fig.4 Result②-1



Fig.5 Result②-1



Fig.6 Result②-2

Study about the Bismuth Crystal

Hana YOSHIDA
Higashi-Katsushika High School

Introduction
What is Bismuth?

- It is a kind of metal.
- The elemental symbol is Bi
- Its melting point is 273°C, which is low among metals.
- It forms hopper crystals.
- Known for its beautiful crystals.

Motive

I first learned about bismuth in elementary school. I was impressed by the beauty, and I want to make it someday, too. This study examined what interested me while I made bismuth crystal.

Suppose

①This is because it undergoes a chemical change at the surface, so the crystal has a faint reddish silver-white color.

②The form of the crystal may change depending on temperature in the same way as potassium alum.

Experiment

①-1 continued heating bismuth until it melted.

①-2 sprayed nitrogen on the first hot crystal.

①-3 sprayed oxygen on the second hot crystal.

①-4 sprayed hydrogen on the third hot crystal.

②-1 left the melted bismuth in the crucible.

②-2 put the crucible which has melted bismuth inside into the heated stainless steel cup.

and I poured aluminium foil and left you unattended for 15 minutes.

②-3 I rode bismuth which melted which entered the crucible on the stove and I poured aluminium foil and left you unattended for 15 minutes.

Result

①-1 The surface color changed in this order : gold, purple, blue, yellowish green, yellow, orange, pink, blue, green.

①-2 The color rarely changed to gold and purple.

①-3 The color changed more and more.

When the temperature reached the lowest point, it did not change.

①-4 The color rarely changed to gold and purple.

②-1-When temperature was low-> The crystal was not formed.

②-1-When temperature was high-> A superficial crystal was formed.

②-2 Sample crystal was formed no matter how much I did it.

②-3 The center part formed a complicated crystal.

The width of the steps on this hopper crystal was wide.

Figure 1: Periodic table of elements showing the location of bismuth.

Figure 2: Bismuth crystal.

Figure 3: Experiment ①-1 showing a bismuth crystal being heated.

Figure 4: Result ②-1 showing a bismuth crystal.

Figure 5: Result ②-1 showing a bismuth crystal.

Figure 6: Result ②-2 showing a bismuth crystal.

Discussion

①The color of the bismuth crystal was found to change in response to oxygen exposure.

If bismuth is cooled in an area with high oxygen concentration, it will easily oxidize and likely form a thick film.

If the bismuth crystal cools down to room temperature, it will easily oxidize and likely form a thick film.

②The size is fixed in the same way as alum crystals according to the time it takes to cool.

In addition, it is thought that the crystal formation follows a law because crystals with almost the same form appeared repeatedly after being heated to the same temperature many times.

When the bismuth is slowly cooled, many crystal cores grow, and come together to make complicated crystal.

When the bismuth is rapidly cooled, few crystal cores grow and make simple crystal.

Or, it hardens without making crystals.

Supposion I drew from ①

③As a color changes with oxygen and quantity to combine, the color change may advance if I keep the crystal of a high temperature.

Experiment

③-1 heat it in an empty container of the stainless steel which heated the bismuth crystal which has been just made.

③-2 leave the bismuth crystal which has been just made at room temperature.

Result

③-1 The color changed gradually and more and more.

③-2 The color rarely changed to gold or purple.

Discussion

The chemical reaction between bismuth and oxygen is more reactive in at high temperature.

Acknowledgement

Thank you to Mr.Katsuya for giving technical advice.

Thank you to Mrs.Hiroi for assisting with English translation.

Thank you to Mrs.Michelle Maczka for assisting with English translation.

Thank you to the bismuth artisan sekka koushou for giving me creative advice.

Reference

Theodore Gray, Nick Mann, Fumitaka Wakabayashi, Mari Taki
<2010>,"THE Elements A Visual Exploration of Every Known Atom in the Universe", Bismuth, pp193

Verification of Desalting Effect of Seawater Using Synthetic Zeolites

TOKYO METROPOLITAN HIGH SCHOOL OF SCIENCE AND TECHNOLOGY
HONOKA NITTA

International Research Session for Next Generations @CHIBA UNIVERSITY 20200216

INTRODUCTION

The Earth has about 1.4 billion km³ of water resources, of which 97% is seawater. Freshwater available to human race is only 0.01% of all water resources. Now, the ratio of world's freshwater use is 70% for agricultural use, 23% for industrial use, and 7% for household use. Decrease in water resources is a major cause of soil desertification and environmental problems. Also, areas where water resources cannot be secured are increasing. For this reason, seawater desalination technology for obtaining usable freshwater from abundant seawater is attracting attention (Fig.1).

Conventional seawater desalination technologies include multi-stage flash evaporation method and reverse osmosis membrane method. These technologies are intended for industrial use and home use where high-purity freshwater is required. However, the cost could be high for irrigation with the highest freshwater use rate (Fig.2). Seawater contains elements such as K and Mg that are nutrients for agricultural products, but also contains NaCl that causes harm for agricultural use. All elements must be removed. It is not necessary to use pure fresh water, and if the concentration of NaCl can be reduced, the possibility of division of seawater for agricultural use will be established. Now, the world's population is about 7.7 billion, but is conceivable to reach 9.7 billion in the next 30 years. The world's growing population may cause global food shortage (Fig.3), but it is easy to imagine water scarcity. Therefore, it is urgent to establish seawater desalination technology that can be performed at low cost. In this study, we investigated the reduction of NaCl concentration by artificial zeolite (molecular sieves), in order to establish a process for producing freshwater that can be used for agriculture from seawater.

Fig.1 Image of research

Fig.2 Water usage rate

Fig.3 World population transition (From UN data)

EXPERIMENT

A. Research method

Additions used in this study are as shown in table 1. In this study, we added molecular sieves (Wako Pure Chemical Industries) and hydrotalcite (Kyowa Chemical) to verify the desalination characteristics. Table2 shows the experimental conditions. Artificial seawater was 100ml, under all conditions.

Table2 Experimental conditions

Experimental conditions	additive	KW-500 is a synthetic hydroxide of Mg / Al ²⁺ + 4 and has the same crystal size as KW-1000. KW-1000 is a synthetic hydrotalcite of Mg / Al ²⁺ + 4.5.
I	Molecular sieves 5A	
II	Molecular sieves 4A	
III	Molecular sieves 3A	
IV	Molecular sieves 13X	
V	Synthetic Hydrotalcite (KW-500)	
VI	Synthetic Hydrotalcite (KW-1000)	
VII	Synthetic Hydrotalcite (KW-2000)	

B. Experimental method

As a reagent, artificial seawater (Aquarium Systems) was prepared and used at a specific gravity of 1.023. After adding 3 g of the additive to 100 mL of the prepared artificial seawater and shaken for 5 hours (Fig. 4), filter and qualify the filtrate using an ion chromatography analyzer (SHIMADZU PIA1000 and SHIMADZU CDD-6A). -Quantitative analysis was performed.

Fig.4 Experimental Device

RESULT & DISCUSSION

A. Changes in solution pH

The pH of the sample solution was measured with a pH meter (HORIBA No. D-51) immediately after addition of the additive and after shaking. The results are shown in Table 3.

Table3 pH change before and after shaking of sample solution

Seawater	5A			4A			13X			HT500			HT1000			HT2000		
	before	after	after	before	after	after	before	after	after	before	after	after	before	after	after	before	after	after
S.78	7.4	8.49	7.56	8.21	7.69	8.0	7.75	8.63	7.79	8.3	8.48	8.43	9.19	9.34				

B. Chloride and sodium ions in filtrate

The filtrate after shaking for 2 hours analyzed was qualitatively and quantitatively using an ion chromatograph analyzer (SHIMADZU CDD-6A). The result is shown in Fig.5.

Fig.5 (a) Additive 4.5g chloride ion (b) Additive 7.5g chloride ion (c) Additive 15g chloride ion (d) Additive 4.5g sodium ion (e) Additive 7.5g sodium ion (f) Additive 15g sodium ion

■ The chloride ion of artificial seawater was decreased by hydrotalcite. Hydrotalcite is composed of magnesium and aluminum and produces a potential difference. Therefore, the causes of adsorption are as follows: (1) chloride ions, which are anions, are electrostatically adsorbed, or (2) chloride ions are subjected to an ion exchange reaction (neutralization reaction). It can be inferred that was adsorbed.

■ It can be inferred that the molecular sieves 4A adsorbed sodium ions because the molecular sieves 4A had a diameter of 0.4 nm strong and could be recovered because of the ion radius of sodium ions (0.39 nm strong).

■ The pH of the solution was measured before and after shaking with the addition of the additive, and the pH was around 8 under any conditions, showing a constant value. Although seawater was slightly acidic, it can be inferred that all additives were neutralized because they showed basicity. In addition, it can be inferred that the change in pH does not affect the adsorption of the solution.

CONCLUSION

■ By adding molecular sieves and hydrotalcite, sodium and chloride ions could be effectively decreased, and also indicated that there was an optimal additives.

■ It was suggested that seawater desalination can be effectively performed by using molecular sieves 4A and hydrotalcite (KW-2000).

REFERENCE

Wajima, T., Shimizu, T., and Ikegami, Y., New simple process of making agricultural cultivation solution from seawater, *Bull. Soc. Sea Water Sci. Jpn.*, 60 (2006), p.201 - 202.

ACKNOWLEDGMENTS

In conducting this research, Kyowa Chemical Industry Co., Ltd. (Sakai-shi, Osaka), Kagawa provided synthetic hydrotalcite as a reagent. Thank you for taking this opportunity.

Effect of Additive Differences in Bromine-Based Plastic Pyrolysis Treatment

Tokyo Metropolitan High School of Science and Technology
TORITSUKA Moemi, HANAZAWA Kimi

Chiba University AP Program "International Research Session for Next Generation" 20200216

Introduction

One of the most popular Maldives resorts in the world has an island called the Garbage Island. This is an island called Tirafooli, where garbage collected from the surrounding area. With no recycling and processing facilities on the island, plastics and metals are burned directly, producing environmental pollutants such as dioxins. In addition, most of the plastic waste generated here is created by travelers during their stay. Knowing this fact, we figured out what to do. Since garbage is made by mankind, it is our responsibility to properly dispose of discarded plastic.

Fig.1 Tirafooli Island of the Republic of Maldives (Trash Island)

Experiment

After investigating ways to solve the above problems, we came across a technique called pyrolysis, which has recently attracted attention in EU countries. However, halogen compounds contained in plastics are a problem, and in this study, additives were added to solve the problem. Furthermore, in this study, low energy treatment was studied in anticipation of the catalytic effect of additives. The additive used is a composite material of aluminum and magnesium called hydrotalcite.

A. Experimental condition

Mixed sample is Polystyrene (Aishi Kasei Industry) 20g, Tetra-Bromo-Bisphenol A (TIBA, Kanto Chemical Industry) 2g, Hydrotalcite (Kyowa Chemical Industry KW-1000, KW-2000) Predetermined amount.

Table 1 Experimental Condition

Condition	Sample	Addition Rate
I	Be-PS	—
II	Be-PS-HT1000	Be-PS-HT-1-1
III	Be-PS-HT1000	Be-PS-HT-2-1
IV	Be-PS-HT2000	Be-PS-HT-1-1
V	Be-PS-HT2000	Be-PS-HT-2-1
VI	Be-PS-HT2000	Be-PS-HT-4-1
VII	Be-PS+Sea sand	Be-PS-Sea-1-1
VIII	Be-PS+NaOH	Be-PS-NaOH-1-1

Be-PS : PS + TIBA

B. Experimental method

The experimental device I used in this study is Fig. 2.

Step1 Put a sample in a metal reactor and perform nitrogen substitution for 60 minutes to remove oxygen from a reactor (50mL/min).

Step2 Raise the temperature of a sample in the metal reactor to 400 degrees as resolution temperature (5°C /min) and kept warm for 30 minutes.

Step3 The gas which passed a condensed and become the production oil. Collect it in a container.

Step4 Attract in the noncondensable gas in a gas pack through the bubbling of the alkaline water solution.

Fig.2 Experimental Apparatus

Result & Discussion

Fig.3 Yield of product oil

Fig.4 Comparison of EDS before and after thermal decomposition of HT

Fig.5 Amount of bromine recovered per gram of additive

A. Product oil and Residue

The surface of the residue after pyrolysis was observed using an energy dispersive X-ray analyzer (EDS, SCA-ANALYZER, BUKER). Observations (wt %) were converted to recoveries (mg) per gram of additive (Fig. 4).

B. Generated gas

Since the gas evolved was less than 1 L under all conditions, all samples may have been converted to the resulting oil and carbon residues. In addition, qualitative and quantitative analysis of aqueous alkaline solutions was performed by ion chromatography, but bromine was not detected under all conditions. Solutions were performed by ion chromatography, but bromine was not detected under all conditions.

C. Consideration on product oil yield

Hydrotalcite (Mg/Al ratio of 2) was used. The properties of hydrotalcite are as follows: (1) Chloride ion is adsorbed. (2) Potential difference is occurring.

D. Considerations on bromine recovery

Properties of hydrotalcite: (1) Chloride ion is adsorbed. (2) Potential difference is occurring.

E. Conclusion

In this study, it can be assumed that bromine compounds contained in plastics were recovered as residues as a result of pyrolysis. The reason why HT electrostatically adsorbed bromine ions, which are anions, can be inferred from the potential difference between Al and Mg. Considering that HT is basic and halogens is acidic, it can be assumed that a neutralization reaction has occurred. In the future, we will conduct a qualitative analysis of the production oil to confirm whether the production oil contains bromine.

Reference

(1) T. Kaneda, N. Uchiyama, T. Yoshida, Removal of HCl, SO₂, and NO by treatment of acid gas with Mg-Al mixed layer. *Chemosphere*, 2011, 82, 587-591.

(2) Jia Deng, Zhao Shi. Synthesis and characterization of a novel Mg-Al hydrotalcite-loaded kaolin clay and its adsorption properties for phosphate in aqueous solution. *Journal of Alloys and Compounds*, 2015, 637, 188-196.

Acknowledgements

In conducting this research, Kyowa Chemical Industry Co., Ltd. provided us with the research reagent Hydrotalcite (Kyowad 1000, 2000). We also toured the Sakai headquarters factory and research institute. Thank you for taking this opportunity.



Fabrication of Superhydrophobic Bamboo Based on ZnO Nanosheet Networks

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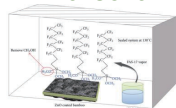
ABSTRACT

Bamboo has been used for furniture, construction, and pulping due to its high strength and surface hardness, easy machinability, and local availability. However, bamboo shows bad decay-resistance and would be attacked and degraded by fungi, insects, moisture, air, and acid rain.

The fabrication and characterization of superhydrophobic bamboo by coating with ZnO nanosheet networks via hydrothermal method and surface modification with fluoroalkyl silane (FAS-17) will be described.

The surface morphologies of samples investigated with SEM and XRD techniques, Water Contact Angle (WCA) and moisture content will be reported.

INTRODUCTION



1. To enhance bamboo decay-resistance
2. ZnO is effective to improve photostability and anti-bacterial for nanocomposite coating
3. Fluoroalkyl silane (FAS-17) to obtain superhydrophobic coatings.

MATERIALS

Bamboo samples, zinc acetate dehydrate, monoethanolamine (MEA), hexamethylenetetramine (HMTA), zinc nitrate hexahydrate ($\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$), deionized water, vapor deposition of FAS-17.

METHODS

- Preparation of ZnO Sol
- Solution Mixing method
- Preparation of ZnO-coated Bamboo
- Dip-coating process
- Surface Modification
- ZnO coated bamboo reacted with fluoroalkyl silane (FAS-17) vapor
- Characterizations

Surface morphologies and chemical compositions of the samples can be characterized with SEM, XRD. Water Contact Angle (WCA) and moisture content can be analyzed using contact angle system.

RESULTS

Scanning Electron Microscopy (SEM)

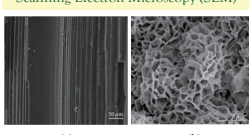


Figure 2. (a) SEM images of original bamboo (OB) and (b) ZnO nanosheet networks treated bamboo (ZNB) with high magnification

X-Ray Diffraction (XRD)

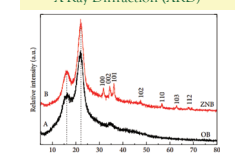


Figure 4. XRD Patterns of original bamboo (OB) and ZNB

Water Contact Angle (WCA)

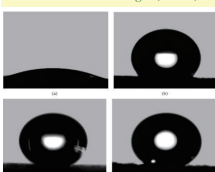


Figure 5. Shapes of water droplet on (a) OB, (b) bamboo sample modified with FAS-17 (FB), (c) FZNB, (d) shapes of simulated acid rain (pH = 3) on FZNB

Moisture Content

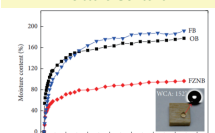


Figure 6. Moisture content of OB, FB, and FZNB

FUTURE DIRECTION

- Utilization of other compound for bamboo surface coating
- Application of other chemicals and methods for more efficient surface modification process in terms of time and costs

CONCLUSION

Fabricated bamboo with ZnO nanosheet networks deposition presented excellent superhydrophobicity and stable repellency towards simulated acid rain (pH = 3). In addition, the treated bamboo exhibited superior fire-resistant, UV-resistant, and water-resistant properties.

Jingpeng Li et al. (2014). Fabrication of Robust Superhydrophobic Bamboo Based on ZnO Nanosheet Networks with Improved Water, UV, and Fire-Resistant Properties. *Journal of Nanomaterials*.
Z. Peng, Y. Lu, L. Li et al. (2013). The draft genome of the fast-growing non-timber forest species moso bamboo (*Phyllostachys heterocycla*). *Nature Genetics*, Vol. 45, No. 4, pp. 456 – 461.

REFERENCES

In Search of Beautiful Chemical Lights

~Concentration and Me~

Chiba Municipal Chiba High School Chemistry Club Kikuchi Miyuki Yashima Tota

I Introduction

Chemical light is a light that glows by energy generated by chemical reaction. Since this chemical light does not require electricity, it is used in events and emergencies etc. We were interested in this reaction that uses chemical light.



II Theory

1,2-dioxetennidion can be made when diphenyl oxalic is oxidized and degraded with hydrogen peroxide. Then, the dye receives the energy generated when the 1,2-dioxetennidion is decomposed, the dye returns to ground state from excited state. Then the chemical light, lights up.

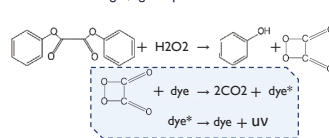


Fig.2 chemoluminescence by diphenyl oxalic and 30%hydrogen peroxide water

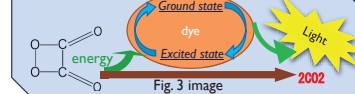


Fig. 4 Dye we are using (EosinY)

III Experiment①

Purpose

Checking if there is a change illuminance in depending on the amount of the dye.

Using reagent

Acetone, diphenyl oxalic, EosinY 30%hydrogen peroxide water

Experiment way

1. Dissolve 0.10 mmol diphenyl oxalate and eosinY (the chart amounts) in 2 ml acetone.
2. Put it to a dark box then add a drop of hydrogen peroxide.
3. Measuring illuminance with an illuminometer.

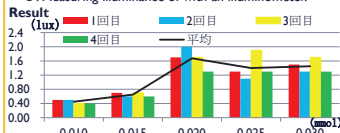


Fig.5 Relationship between amount of eosinY and illuminance in experiment ①

Study

Illuminance does not increase above 0.020 mmol

→We thought it was the cause of concentration quenching.

Experiment②

Purpose

Separating the distance between dye molecules.

Using reagent and Experiment way

Basically the same as Experiment①, but changed the volume of acetone to 4 ml, and number of trials from 4 to 5.

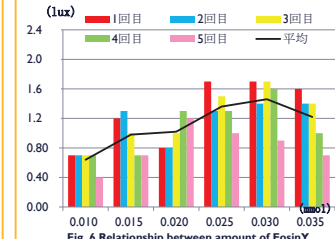


Fig.6 Relationship between amount of EosinY and illuminance in experiment ②

Study

Lowering the concentration of what increase the amount of EosinY before concentration quenching occurred.

IV Outlook

- Change the amount of eosinY more dramatically to get an overview of concentration quenching.
- Study the effects of surfactants.

V Reference

- 実教出版編集部,サイエンスビュー化学総合資料,四訂版,(2019),実教出版株式会社, p.123
- 鳥袋泰盛 (2018)「光れ!ケミカルライト通シウ酸エステル化学発光における発光強度と発光時間の制御4」
- 『第24回全国高等学校文化祭 自然科学部門論文展 立教池袋高等学校』

No.35 Luminol Reaction ~Looking for the Reason of Faint Light~

Chiba Municipal Chiba High School Chemistry Club Shota Sugiyama Yusuke Tanaka

① Introduction

We were interested in Luminol Reaction when we saw the demonstration in the chemistry club. So, we decided to research more about Luminol Reaction. We found out the difference of maximum illuminance to change base volume, oxidation aid and base that is in luminol solution. The figure below is Luminol Reaction's mechanism.

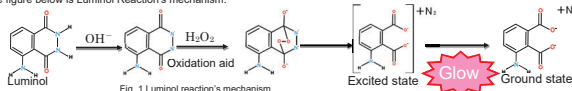


Fig. 1 Luminol reaction's mechanism

② Purpose

In previous research, when the amount of sodium hydroxide is increased, maximum illuminance increases too. But if the base volume is increased too much, maximum illuminance decreases. So, we wanted to confirm the factor that affects maximum illuminance.

③ Chemical・experimental method

- Luminol(0.0142mmol)
- sodium hydroxide aq
- or potassium hydroxide aq
- hydrogen peroxide solution (3%)

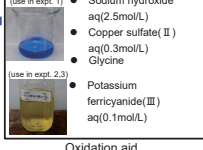


Fig. 2 Appearance of glow

④ Expt. 1 : Copper and sodium hydrogen

First, we confirmed the maximum illuminance's change of volume of sodium hydroxide. In previous research, they used bifurcated test tubes. But we used petri dishes to measure more accurately. (Result)

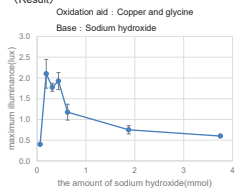


Fig. 3 Copper and sodium hydroxide

⑤ Expt. 2 : Change oxidation aid

In expt. 1, we assumed the reason of decrease is by oxidation aid. So we changed oxidation aid from copper and glycine to potassium ferricyanide(III).

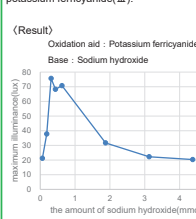


Fig. 4 Potassium ferricyanide and sodium hydroxide

⑥ Expt. 3 : Change base

In expt. 2, we assumed the reason of the decrease is because of the base. So, we changed the base from sodium hydroxide to potassium hydrogen.

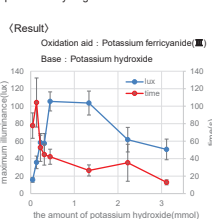


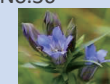
Fig. 5 Potassium ferricyanide and potassium hydroxide

⑦ Consideration・Outlook

In expt. 3, we thought there was a different reaction when the base was changed. So, we want to confirm what happen when the base is Lithium hydroxide.

⑧ References

- サイエンスビュー化学総合資料 三訂版 実教出版 p.123
- 千葉市立千葉高等学校理化学部 2013 年度ルミノール反応年度末論文「ルミノール反応と条件」吉田 龍平
- 千葉市立千葉高等学校理化学部 2017 年度ルミノール反応年度末論文「ルミノール反応と条件」吉田 龍平
- 「アミノ酸によるルミノール反応〜2種の思いを乗せて〜」菅原 孝太郎 湯沢 蒼生 和田 レオン
- 東京理科大学 1 部化学研究部 2012 年度秋輪講義「化学発光」



To dye with gentian color

YOSHIMURA Haruna

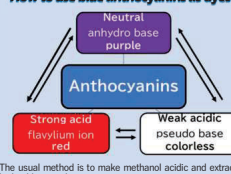
Chiba Prefectural Yakuendai High School Chemical club

Introduction

I wanted to study gentian in a research project at the Faculty of Chemistry. Because gentian is used in the design of our school badge.

I focused on the color of the flowers and dyed them with gentian flowers. Through this research, I thought about how to use blue anthocyanins as dyes. Why did you choose this research theme? Anthocyanins have been studied by many people since ancient times, and there are many references.

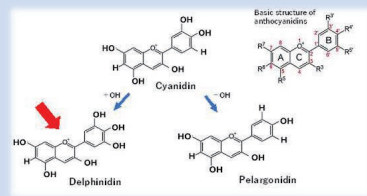
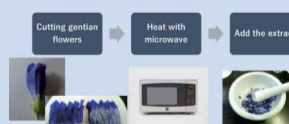
How to use blue anthocyanins as dyes



The usual method is to make methanol acidic and extract with hydrochloric acid.

Experiments and results

How to make a gentian stain



The pigment obtained in the experiment was judged to be anthocyanin-based.

Compared to gentian and purple cabbage, the difference in color development due to pH was observed (Fig.1)

Result : The extract was found to be an anthocyanin dye. However, a precipitate was observed in the extract.

Fig.1 Comparison of pH

How to remove the precipitate and obtain the dye



How to extract blue anthocyanins without acidification with hydrochloric acid?

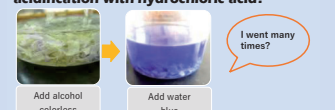


Fig.3 Extraction of blue anthocyanins

Discussion and summary

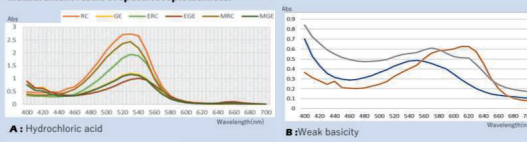
Why is it colorless?

The sugar deviates from the structure of anthocyanins. In terms of structure, it does not hold as color.

Changes due to pH were observed.

Anthocyanins are starting to dissolve in the solution. It can be seen from the relationship between wavelength and pH.

Measurement result of spectroscopic atimeter



A: Hydrochloric acid

B: Weak basicity

References : Science View, 2018年9月, 2016

Future research

In this study, I think I was able to extract the blue anthocyanin in its original color. However, there are still unclear reactions. I want to do more research.

Make Delicious *Onsen Manjyu* !!

MIYASHITA Tomoaki

Chiba Prefectural Yakuendai High School Chemical club

Introduction

I think that many people feel happy when eating delicious something. For example I like *Onsen manjyu*. Then I came up with a great idea "Make delicious *Onsen Manjyu* that can make many people happy!!"

What's *Onsen Manjyu* ?

Onsen Manjyu is bean-jam buns that sold in towns famous for hot springs.



[Nozawa-Onsen]/Nagano
Hukiya-no-Onsen-Manjyu



[Ikaho-Onsen]/Gunma
Yunohana-Manjyu

Materials and methods

Cake flour : 100g
Brown sugar : 50g
Hot water : 30g
Baking soda : 3g
Water : 3g
(to dissolve baking soda)
Bean-jam : 300g



1. Divide bean-jam into about 10 parts.
2. Mix and melt brown sugar and hot water in bowl.
3. Dissolve baking soda with water. And sift cake flour.
4. When 2 cools down, mix 3 in bowl 2.
5. Divide the dough made in 4 into same number as 1.
6. Wrap one of them in the dough.
7. Steam.



Results and discussion

When kneaded with flour mixed with brown sugar, it became sticky. When making Bun shapes, the flour is better with strong flour than with flour. Because the flour is more dry than the flour.

When steaming, use a high heat from the beginning to crack the surface. (Fig. 1) The surface does not crack when steaming for 6 minutes on low heat and then for 6 minutes on high heat. (Fig. 2)

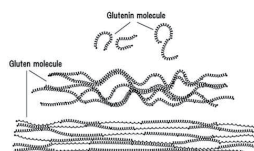


Conclusion

A delicious bun is determined by the balance of the amount of water and brown sugar, how to mix the flour, the amount of strong flour as flour, and the steaming time.

Why use flour for Onsen buns?

The flour has a protein content of less than 8.5%. It is made from soft wheat. Strong flour has a protein percentage of 12% or more and is made mainly from hard wheat. This protein is called gluten, and when it is kneaded with water, it becomes more elastic. This elasticity is the cause of becoming hard when baked. Therefore, strong flour hardens when it is baked, so it is not suitable for sweets.



- Reference
- ・「普通の茶まじゅうの作り方」和菓子の早稲田 <http://waseda-ya.com/original11.html>
 - ・「餅焼く」 <https://meaning.jp/posts/454>
 - ・「グルテン分子」 <http://www.hanai.com/OneDrive/アスクトップ/グルテン.pdf> 写真家 関根

Math on the clock

Kimijima Kenta
Chiba Prefectural Yakuendai High School
Second grade

Trigger

When I watched the watch during class, I thought that the hands were overlapping, so I was worried about when they overlap and how many times a day they overlap.



Conclusion

The following formula was obtained as a of the study.

M (Number of rotations per day for hand with higher rotations.)
and
N (Number of rotations per day of the hand with lower rotation.)

The time taken to overlap once can be expressed by the following formula.
1440/(M-N) minute

The number of times of the day can be expressed by the following formula.

M-Ntimes

Method

The angle that M takes in a day is 360 x M. N becomes 360 x N similarly.

One day is 1440 minutes, so the angles taken per minute are M / 4 and N / 4 respectively.

Here, in order for the needle M and the needle N to overlap, (M-N) / 4 x t = 360.

The next 't' is the time until the needle M and the needle N overlap.

t=1440/(M-N)

From here 't' is the time it takes for the two hands to overlap once.

1440/t=(M-N)

From this equation, the number of times that two needles overlap each day is "M-N".

Outlook

This time I thought with two needles. Next time, I would like to generalize the number of needles so that the answer can be derived regardless of the number of needles.

SIMULATION OF TERAHERTZ FREQUENCY METAL DETECTION IN AIRPORT SECURITY SYSTEM

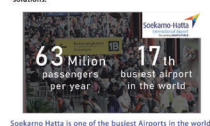
Hendry Steven Marbun, Irfan Budi Satria, Gita Ayu Salsabila



Tourism is a very important element of Indonesia's economy, and a very large contributor to its foreign exchange revenues. With great publicity and major world-famous destinations such as Bali and Lombok, Indonesia's tourism sector has enjoyed a very large growth throughout the years. Now it sits at the 4th spot of the fastest-growing Tourist Industries in the world, 3rd in Asia, and number one in Southeast Asia [1].

This translates into an incredible growth in the Aviation sector as well. Because of this, current security must absolutely not be compromised. However, current security technologies possess several concerning weaknesses that can be improved.

In this presentation, we propose a new security technology to be applied in Airport Security systems, that addresses some health and privacy, risks residing in current security solutions.



Soekarno Hatta is one of the busiest Airports in the world.



Backscatter X-Ray

Works by generating x-rays in small intensity and firing at the passenger. X-ray ionization energy that is scattered from the finger is captured by a detector to generate 2D image.

Radiation released is around 0.02 - 0.03 microsieverts with a wavelength of 1-10 meters, almost equivalent to being exposed to natural radiation for 1 hour, this poses several health risks such as cancer.

Different from Medical X-Ray, this technology only penetrates clothes and approximately 1 inch into the body of the passenger, this causes a general unrest, privacy and ethical problems.

Millimeter Wave

Works by generating x-rays in small intensity and firing at the passenger. X-ray ionization energy that is scattered from the finger is captured by a detector to generate 2D image.

Radiation released is around 0.02 - 0.03 microsieverts with a wavelength of 1-10 meters, almost equivalent to being exposed to natural radiation for 1 hour, this poses several health risks such as cancer.

Different from Medical X-Ray, this technology only penetrates clothes and approximately 1 inch into the body of the passenger, this causes a general unrest, privacy and ethical problems.



Terahertz Technology



Imaging with Terahertz frequency can be a solution to the constraints experienced by the technology. Imaging with Terahertz frequency has a frequency between millimeter wave technology and backscatter technology, which is at a frequency of 0.1 - 10 THz, so it is expected to be able to detect hidden items, especially metal with Terahertz waves, which can make images more accurate and safe for passengers.

Terahertz frequency imaging requires an antenna as a receiver from the waves that are fired. Through these antenna parameters, images can be processed and interpreted in 2D. This study uses a bowtie antenna with a bolometer that functions as a receiver. Bowtie antennas with a bolometer are duplicated into 25 pieces and placed in a 5 x 5 position (unconnected). Through the antenna parameters, in the form of power excitation on each bolometer, image processing can be performed so that objects in the form of metal can be imaged.

In this research is proposed a Terahertz wave as frequency radiation to locate and do the imaging process of metal detection with variations of frequency of radiation, polarization, and variations of sensor that were being used at the simulation. The simulation is using CST Studio Suite software.

Simulation is done in the software Computer Simulation Technology CST Studio Suite.

Simulation Result is plotted using Matlab laboratory (MATLAB).

Simulation Components:

- Plane Wave As Radiation Source
- Metal (material: copper annealed)
- Metal (Detection Sensor: antenna: Bowtie) with bolometer

Simulation is done in multiple variations:

- Frequency (0.5 THz to 0.75 THz; 1 THz to 10 THz)
- Metal Shape (round and square)
- Sensor Shape (without Solids and with Solids)

Imaging with Terahertz frequency uses a frequency of 0.1 - 10 THz, so it is expected to be safe with minimal health and privacy risks, while also able to detect various metals. Our results show that the optimal configuration for Terahertz imaging is to use 10THz frequency, therefore health risk posed may be higher than Millimeter Wave, but less than Backscatter. Accuracy of Terahertz Imaging is also quite good and is viable to implement it as an alternative to existing solutions found in the Airport.

Comparison of the two existing vs. one proposed solutions.

Antenna Bowtie and Bolometer as the Sensor.

Simulation of the System (rectangular metal and 5x5 bowtie antenna and bolometer as the sensor).

References

- [1] World Economic Forum, 2019, "The Travel & Tourism Competitiveness Report 2019", Geneva, World Economic Forum.
- [2] The Jakarta Post, 2018, "Soekarno-Hatta world's 17th busiest airport", www.thejakartapost.com/news/2018/04/17/soekarno-hatta-worlds-17th-busiest-airport.html (Online).
- [3] M. Hendry Steven, 2019, "SIMULASI PENCITRAAN TERAHERTZ DENGAN ANTENA BOWTIE DENGAN KOLIMETER 5x5 BAGAI PENDETEKSI LOGAM DI BANDAR UDARA", University of Indonesia.
- [4] M. J. Frich, R. Oslander, "Terahertz Waves for Communications and Sensing", John Hopkins APL Technical Digest, vol. 2004, pp. 349-350, 2004.

No.40 ICT USAGES IN YOGYAKARTA'S TOURIST VILLAGES

Faculty of Geography, Universitas Gadjah Mada, Indonesia

Developmental gap between tourist villages occurs due to differences in tourist attractions and existing facilities. One of the innovations which is presently in line with global development is the use of information technology. This includes information systems, internet, information technology, communication, computer software, networks, along with the infrastructure which is hardware. The function of hardware are to process, send information and its following software and also networks

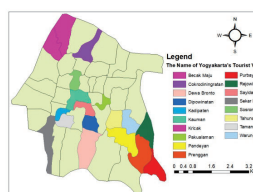


Fig 1. Research objects

No	Tourist Village	Stage of Development	Characteristics
1	Taman Sari Diponegoro	Consolidation	Visitors had reached the peak and now it is limited to 500-600 visitors each year. New policy related to entry hours (limited to 4pm). Accommodations and transportation well provided. World's Heritage.
2	Kadipaten Kauman	Exploration	There's no economic opportunity. Few visitors and cannot be averaged annually.
3	Cokrodingrat Dewa Reme Bekas Maju Pakualaman Sayidan Sekar nti	Involvement	Supported by community. Local products only sold to few visitors. Local peasant to facilitate food and beverages for the visitors, and the got profit from it. Seasonally visitors.
4	Susutemuduran Purbayan Tuhunan Kojayan-tunggan, Ponggan	Development	Got the investors. Knowledgy people from either offline or online media. Increasing visitors.
5	Warungboto	Rejuvenation	Build a new attraction.
6	Pandeyan	Decline	Visited only by its local people and when there's an annually cultural event. The loss of tourism function. Experience a competition with surrounding attraction. Decreasing quality of service, not professional. Experience a considerable amount of loss every attraction. Decreased enthusiasm to maintain the culture and the tourist village.



Fig 4. Taman Sari Tourist Village

THE AIMS

- 1) Identifying the development of 17 tourist villages using the Butler Tourist Area Life Cycle Theory, 2) Determining the use and needs of ICT in tourist villages using the Smart Tourism Destinations Theory, and 3) Analyzing the role of ICT in developing tourist villages in the City of Yogyakarta.

RESEARCH METHOD

This research used qualitative method. Literature review, observation, and interview with the tourist village's managers were done to collect the data from 17 tourist villages in Yogyakarta.

RESULT AND DISCUSSION

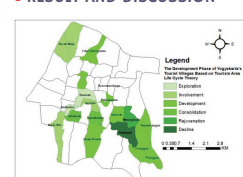


Fig 2. Distribution map of the tourist village development

The left side picture shows the distribution of the stage development in Yogyakarta's tourist villages. To determine the stage of development, it used the variables of the number of visitors; the availability of tourism attractions; investors, local products, economic opportunities; and the scale of trade. The short of explanation about the characteristic of tourist villages explored was shown in Table 1.

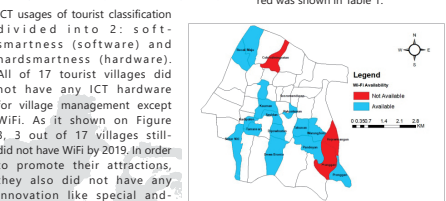


Fig 3. Distribution map of the WiFi availability

The role of ICT in developing tourist villages is divided into two categories; active from tourist village managers and passive from tourists. Taman Sari tourist villages tends to passive role through their tourist who shared their photos after visiting Taman Sari on Instagram. There were 224669 photos (June, 22 2019) uploaded by tourists. Warungboto hashtag searched in Instagram, found 9266 photos (June 22, 2019). Taman Sari and Warungboto has a differentiation related to the role of ICT. Warungboto could balance the role, both passive and active to raise their tourist villages promotion. While Taman Sari mostly tends to passive role. The balance promotion affects to the higher stage of development. In this research, Warungboto was in the highest of the stage of development.

Conclusion

- 1) The development of tourist villages caused by several factors: the availability of human resources and the tourist attractions
- 2) The use of ICT in the villages was limited to Wi-Fi usage and the use of social media such as facebook and Instagram.
- 3) The role of ICT actively by managers and passively by tourists was able to accelerate the development of tourist villages.

VARIABILITY ANALYSIS OF SEA SURFACE TEMPERATURE AND CHLOROPHYLL-A CONCENTRATIONS IN SOUTH JAVA AND WEST SUMATRA DURING PERIOD 2005 - 2014

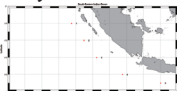
Erlin Beliyana dan Purwanti L. Sabrina

INTRODUCTION

The variability of Sea Surface Temperature (SST) and Chlorophyll-a (Chl-a) concentration in southern seas of Java and western seas of Sumatra is intriguing by various phenomena such as water mass mixing and the upwelling process. The aim of this research was to assess the variability of SST and chlorophyll-a concentrations in this study area during period 2005-2014.

MATERIALS AND METHODOLOGY

Study Area



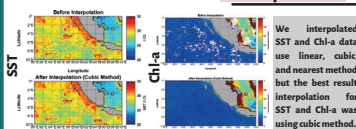
The area for this research is 90-110° E and 10-0° S. The specific locations examined were southern seas of Java and western seas of Sumatra with five observation points (pin 1 - pin 5).

Data Components

Data Components	Source of Data	Length of Data	Resolution
Sea Surface Temperature	Level 3 Aqua MODIS	January 2005 - December 2014	4 km (spatial resolution)
Chlorophyll-a	JAMSTEC		
Dipole Mode Index			

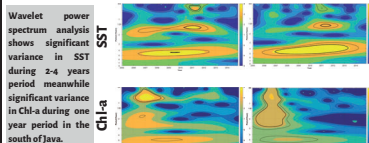
RESULTS

Interpolations



We interpolated SST and Chl-a data using linear, cubic, and nearest method but the best result interpolation for SST and Chl-a was using cubic method.

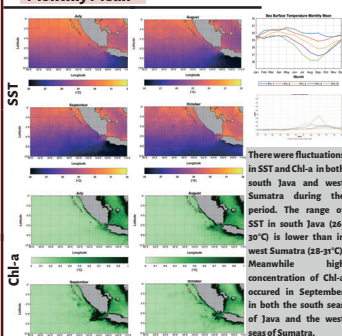
Wavelet



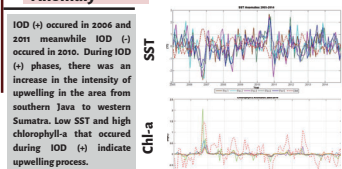
CONCLUSIONS

The SST and Chl-a concentration during period 2005-2014 were significantly influenced by the monsoon and IOD phenomena in this study area. During a southeast monsoon, the SST decreases and concentration of Chl-a increases. During IOD (+) phases there was a negative anomaly in SST and positive anomaly in Chl-a concentrations. The highest of Chl-a concentration occurred during September in pin 5 (southern seas of Java). It is caused by upwelling process meanwhile Sea Surface Temperature concentration decreased during this period.

Monthly Mean



Anomaly



Carbon Dioxide (CO₂) Concentrations in Classrooms

The importance of indoor air quality

People spend a large part of their life indoors! According to NHAPS, 2001, Americans, on average, spend about **90 percent** of their time indoors, where the concentrations of some pollutants are often 2 to 5 times higher than outdoor concentrations. Therefore, inhalation of indoor air plays the major role in human health and comfort.

Why measure CO₂ ?

CO₂ is harmless to human health at a low concentration, but in the building with poor ventilation the level can easily rise which can cause headache, fatigue or dizziness. **Many people also was not noticed** even though the levels were exceed the acceptable values [1].

How much CO₂ is too much?

According to ASHRAE 62.1-2016, CO₂ concentration greater than **5000 ppm** can pose a **health risk**. However, in most buildings, concentrations almost never rise to these levels.

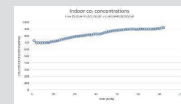


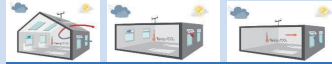
Figure 1. Example for indoor CO₂ concentrations.

Therefore, CO₂ at the concentrations commonly found in buildings (600-2500 ppm) is not a direct health risk but can cause

headache, fatigue or dizziness. Thus, there is a guideline of comfort acceptability for CO₂ concentrations which is about **700 ppm above outdoor air levels**.

CO₂ concentrations in classrooms

Naturally ventilated classroom:



It use natural force to move the air. Classroom will include windows, solar chimneys, wind towers or trickle ventilators. If all of the windows are shut, CO₂ levels can easily increase to over 1,500 ppm (within 30 min). However, it depends on initial concentration of CO₂ and number of students and it can up to 4000 ppm [2].

Factors affecting CO₂ concentrations classroom



the concentration of CO₂ in classroom depends mostly on the **volume of classroom and the number of students** [4]

How can we reduce CO₂ concentrations in classrooms?

Short term solutions

1. Promote ventilation in classroom: For example, we can open windows before and during class.

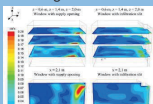


Figure 2. Comparison of airflow velocity for a window with supply terminal and diffuser ventilation (Bulundak A. et al., 2014, p. 327).

Or open mechanical fans before class to reduce initial CO₂ concentrations.

Installing CO₂ sensor and set high alarm

References

- Pereira, L. D., Raimondo, D., Cognati, S. P., & Silva, M. G. da. (2014). Assessment of indoor air quality and thermal comfort in Portuguese secondary classrooms: Methodology and results. *Building and Environment*, 81, 69-80.
- Griffiths, M., & Eftekhari, M. (2008). Control of CO₂ in a naturally ventilated classroom. *Energy and Buildings*, 40, 556-560.
- Cichowicz, R., Sabiniak, H., & Wielgosinski, G. (2015). The influence of a ventilation on the level of carbon dioxide in a classroom at a higher university. *Ecol Chem Eng S*, 22(1), 61-71.

Long term solutions

4. Investigate the classroom ventilation system and optimize it: For example, classrooms with air conditioning system and without windows need to use exhaust fan to help moving the air out of the room.

My current study



Figure 4. Classroom at Department of Environmental Science, Faculty of Science, Chulalongkorn University.

- Study changes of CO₂ concentrations in classroom
- Study and Improve a simplified CO₂ concentration model
Study sites: Department of Environmental Science, Faculty of Science Chulalongkorn University, Bangkok, Thailand.

[4] Teleszewski, T., & Gladyszewska-Fiedoruk, K. (2018). Changes of Carbon Dioxide Concentrations in Classrooms: Simplified Model and Experimental Verification. *Pol. J. Environ. Stud*, 27, 2397-2403.



มหาวิทยาลัยมหิดล
Mahidol University
Wisdom of the Land

Comparison of Muay - Thai training program for increasing of Muay Thai athletes' muscle strength



For this research 3 kind of exercise

1 Upper body 2 Core body 3 lower body
First Things

For most of us between 60 and 100 beats per minute (bpm) is normal in the age category closest to yours, read across to find your target heart rate. Target heart rate during moderate intensity activities is about 70-80 % of maximum heart rate.

Heart Rate	Effort	Effect
175-190	Very hard 90-100%	Performance Redline Zone Develops maximum performance and speed
152-171	Hard 80-90%	Threshold Zone Increases maximum performance capacity
133-151	Moderate 70-80%	Aerobic Zone Improves aerobic fitness
114-133	Light 60-70%	Temperature Zone Improves heat endurance and fat burning
95-114	Very light 50-60%	Healthy Heart Zone Improves overall health and helps recovery

Exercise resistance for about 75% of the highest ability to lift the weight only once (One repetition maximum: 1-RM)



The last week will test muscle with Isokinetic machines, Then the results Group 1 have the highest increasing of muscle strength because in the morning sample survey after get up and go to training they don't feel tired like another group training in the evening after study or work and go to training some people can be tried already and they have to training.

Therefore the group 1 have more improvement than group 2.

Mr.Khomkrit Muadmai



The development of learning material using Arduino to investigate the gas law

Kansuda Mayer¹, Suthida Chamrat²

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²Science Education Division, Department of Curriculum, Instruction, and Learning, Faculty of Education, Chiang Mai, Thailand

Abstract

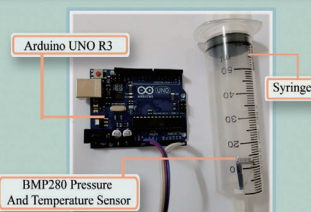
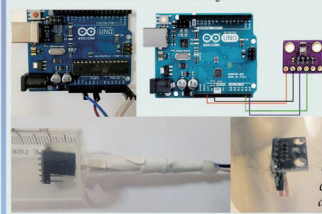
Many research shows that student's understanding of gas law is still lacking. Students experience the problems of visualizing the ideas of gas law causing misconceptions, and traditional pedagogy can't solve this issue. To overcome misconceptions derived from the students by created learning material using the knowledge of computing science. This project aims to use new learning material in Chemistry education – the Arduino to help students understand the gas law easier and learn how to inference from empirical evidence. This learning material uses Arduino IDE software for coding and the Arduino Uno R3 in combination with the BMP280 pressure and temperature sensor for measuring. Students investigated the gas law and the equation relating to the temperature, pressure, and volume of gas based on real-time data collected through Microsoft Excel and Data Streamer. The procedures and mechanisms of this learning materials were described and discussed for future research.

used materials

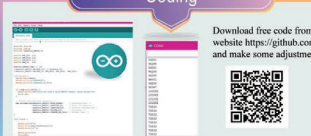
- Arduino Uno R3
- Jumper cables for connection of sensors
- Long jumper cables for the sensor
- BMP280 pressure and temperature sensor.
- 50 mL plastic catheter syringe
- Hot glue/hot glue pistol and tape
- Soldering iron
- A computer with Arduino IDE installed and Microsoft Excel

Assembly Instructions

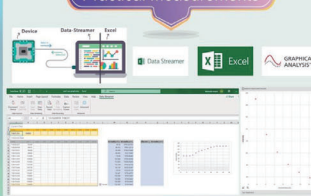
- Remove the plunger from the syringe.
- Solder headers to the BMP280 sensor breakout.
- Run the long jumper cables through the outlet of the syringe. In case you may have to widen the opening. Be careful to omit that the cables are getting damaged.
- Connect the sensor to the Edge connector. GND to 0V, VCC to 3.3V, SCL to pin A5, SDA to pin A4.
- Connect the Arduino to your computer.
- Upload the script to the Arduino.
- Check that sensor is running correctly. Carefully pulling the cables, move the sensor to the top of the syringe.
- Add hot glue tape to the end of the syringe outlet then insert the plunger. Check if the syringe is closed air tight, otherwise add more hot glue. Let cool the hot glue.
- Move the plunger a bit further than the desired resting position
- Check again that the sensor is working. If you move the plunger, the numbers in the serial monitor should change.



Coding



Practical Measurements



No.49

AUTONOMY SUPPORT, COMPETENCE AND MOTIVATION IN SCIENCE AS PREDICTORS OF STUDENTS' INTENTION TO PURSUE THE SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS (STEM) STRAND IN K TO 12 SENIOR HIGH SCHOOL

Virgie Lee E. Deligero, M.A., Enriqueta D. Reston, Ph. D.

Science and Mathematics Education Department, School of Education, University of San Carlos



Rationale of the Study

With the K to 12 basic education reform, there is the need to investigate the factors that contribute to students' taking to pursue science-related careers through the Science, Technology, Engineering and Mathematics (STEM) academic strand in senior high school. The findings of this study may serve as basis for implementing necessary changes in pedagogy and policy which can lead to more students becoming interested in, and subsequently pursuing, careers in science.

Theoretical Framework

Self-determination Theory (SDT)

Individuals are born with a natural striving to exercise and elaborate their interests, but the social environment determines the pursuit of further development in a chosen area. Central to SDT is the concept of needs. With respect to student persistence, the three basic needs of autonomy, competence, and relatedness must be met in order to promote students' continued interest and enjoyment of learning experiences (Ryan & Deci, 2000).

Motivational Model of Persistence

Science teachers' support of students' autonomy has a positive influence on students' self-perception of autonomy and competence which, in turn, has also a direct influence on students' science motivation. (Lavigne, Valleraud & Miquelton, 2007).

Conceptual Framework



Statement of the Problem

The study aims to investigate Grade 10 students' perceived autonomy support in the classroom, perceived competence and motivational beliefs in science as predictors of their intention to pursue the STEM academic strand. Specifically, the study seeks to answer the following questions:

1. What are the students' perceived level of autonomy support in science?
2. What are the students' perceived level of competence in science?
3. What are the students' level of motivation in terms of intrinsic motivation, self-determination and self-efficacy?
4. Is there a significant difference in students' perception of autonomy support in the classroom, perceived competence, motivational beliefs in science and intention to pursue a STEM strand when students are grouped by gender, academic achievement in Science, and type of school?
5. Are there significant relationships between students' perceived autonomy support in the classroom, perceived competence and motivational beliefs in science with their intention to pursue the STEM strand?

Methodology

Design: Non-experimental cross-sectional explanatory study

Respondents: 631 (265 males, 366 females) Grade 10 students from public & private secondary schools

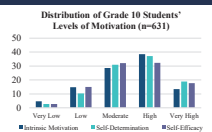
Instruments:

- Learning Climate Questionnaire (LCQ) for perceived autonomy support
- Perceived Competence for Learning Scale (PCLS-L) for perceived competence
- Science Motivation Questionnaire (SMQ-J) for motivation

Treatment of Data:

- Descriptive measures
- Multivariate Analysis of Variance (MANOVA)
- Univariate analysis and Duncan post-hoc multiple comparisons
- Logistic regression analysis

Results



Distribution of Grade 10 Students by Levels of Motivation and Intention to Pursue the STEM Strand

Levels of Motivation	Intention to Pursue the STEM Strand	
	No. (n=242)	% (n=242)
Intrinsic Motivation		
Very Low to Low	79	32.7
Moderate	68	28.1
High to Very High	95	39.3
Self-Determination		
Very Low to Low	47	19.4
Moderate	79	32.6
High to Very High	116	47.9
Self-Efficacy		
Very Low to Low	68	28
Moderate	76	31.4
High to Very High	98	40.5

Results of MANOVA

Sources of Variation	Wilks's Λ	F	p
Gender	0.97	3.89	0.002*
Science Academic Achievement	0.93	2.93	<0.001*
Type of School	0.91	2.79	<0.001*

Note: *p < .05 significance level

• High mean scores on perceived autonomy support in the science classroom ($M=5.13$) and perceived level of competence ($M=5.50$) were reported among those who intend to pursue the STEM strand; those who do not ($M=5.03$ and $M=4.98$ respectively).

• Results confirmed that the combined dependent variables of perceived autonomy support, perceived competence and motivational beliefs have shown significant multivariate effects with respect to students' gender, level of science academic achievement, and type of school.

• The logistic regression model showed that perceived autonomy support, perceived competence in science, and intrinsic motivation, had shown predictive utility in relation to students' intention to pursue the STEM strand. Student's intention of pursuing the STEM strand was positively related to perception of competence in science ($\beta = 0.44$, $z^2 p = .001$) and intrinsic motivation ($\beta = 0.12$, $p = .001$). The overall success rate or predictive accuracy of the model is 67.1%.

Conclusions

This study concludes that students' perceived autonomy support in the classroom, perceived competence in science, and intrinsic motivation are significant predictors of students' intention to pursue the STEM strand. Findings further suggest that students with low perceived levels of competence in science, high perceived levels of competence in science, and high levels of intrinsic motivation are more likely to pursue the STEM strand.

Findings of the study can provide useful information in understanding students' persistence and may hold important roles as basis for pedagogy and policies to develop students' career interests or goals within the areas of STEM.

Acknowledgment

• DOST-SEI through the Accelerated Science and Technology Human Resource Development Program – National Commission on Graduate Science and Mathematics Education (ASTHROP-NCGSMSE)

• Dr. Rita May P. Tagliba (Dean, USC-SED), Dr. Enriqueta D. Reston (thesis adviser) and the panel of examiners, Dr. Richard R. Jugar, Dr. Nelson A. Rosarino, and Ms. Ruby D. Bantayan

• USC-SMED staff, Department of Education, Toledo National Vocational School, friends, and family

No.50

COMMON STUDENTS' MISCONCEPTIONS IN THERMODYNAMICS

Pangasinan State University • Frenzy B. Macayana

The common misconceptions of students in Thermodynamics particularly in heat and temperature were: a) Materials at 0°C such as ice contain no heat because it is cold; b) Materials with the same temperature will always contain the same amount of heat; c) Materials with higher temperature always contain more heat than materials with lower temperature; d) Temperature is a value of heat

In heat transfer and temperature topic, the misconceptions of students were: a) we wear sweaters during cold weathers to keep cold out; b) heat and cold both flows but in opposite direction; c) materials are cold because they contain cold; d) metals get hotter because they concentrate the heat; and e) we feel cold because the cold enters our body.

Lastly, in thermal properties of materials topic, the misconceptions of students were: a) materials absorb heat slowly because they contain cold; b) metals are colder because they store more cold than other materials; c) materials which feels hotter will always have higher temperature; d) some materials are good conductors of cold; e) materials which feels colder will always have lower temperature; f) materials that feel hotter always contain greater amount of heat; and g) metals contain more cold than woods even at the same temperature.



Figure 1: Heat and Temperature
The large container contains water at 50°C and the small cup of water contains 90°C water. Which of the two has higher heat energy?



Figure 2: Heat Transfer
When you touch a nail stuck in ice, does cold flow from the nail to your hand, or does heat flow from your hand to the nail?



Figure 3: Thermal Properties of Materials
Why do floor tiles colder than the wooden floor even though both floor materials are at the same temperature?

Image sources:

Figure 1 – Conceptual Physics 11th Edition by Paul G. Hewitt pp 271

Figure 2 – Conceptual Physics 11th Edition by Paul G. Hewitt pp 285

Figure 3 – Conceptual Physics 11th Edition by Paul G. Hewitt pp 285

No.51

TWINCLE ASEAN Chiba University 7th-19th February, 2020

The Effects of Ionizing Radiation on Human Physiology

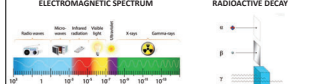
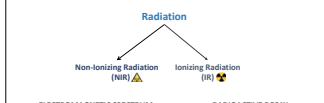
Yong Chenda, Thong Simey, 4th year in Physics, Royal University of Phnom Penh

I. Objective

- Understanding how Radiation works
- The effects of Ionizing Radiation
- How to protect the body from Ionizing Radiation

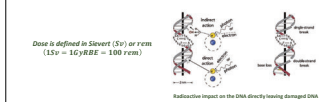
II. What is Radiation?

Radiation is energy that comes from a source and travels through space and may be able to penetrate various materials.



III. How does IR affect human physiology?

Ionizing Radiation can penetrate and interact with the human body due to its high energy. It can impact on DNA structure by two ways: breaking chemical bonds and changing the structural feature of the DNA chain. IR can cause cells to Senesce (aging), Apoptosis (programmed cell death), and unregulated cellular division that lead to tumors or cancers. Degrees of Radiation poisoning is determined by "Dose". Dose is defined as the amount of energy absorbed in a unit of mass. The effects of radiation does not only depend on Dose, but it also depends on the type of radiation.



IV. What are the effects from Ionizing Radiation?

• Effects on Skin: The skin is very vulnerable to radiation as is the outer covering of our body. It contains three layers of tissue: the epidermis, dermis and hypodermis. The skin damage is happening a few hours after exposure that include swelling, itching, redness and hair loss. The serious radiation sickness on skin are blisters and ulcers. It would take several weeks to few years to heal the diseases. Healing time depends on the amount of radiation the skin received.



• Effects on Thyroid Gland: Thyroid is located in front of the neck beneath the larynx. Thyroid produces hormones that regulate heart rate, blood pressure, body temperature and weight. Thyroid cancer can undergo by the effects of radiation. It can create lump on your neck, change your voice, increase hoarseness, difficult to swallow, cause pain in your neck and throat, etc.

They have observed that there are high risk of thyroid cancer on the victims from several nuclear catastrophes such as Hiroshima, Nagasaki, Chernobyl, and more recently, Fukushima (AAMA Intern Med. 2015 Feb). The atomic bomb survivors has been seen to have thyroid cancer from 60 to 82 years after receiving the radiation in Fukushima accident, 35% of the residents have developed thyroid nodules and/or cysts (NCBI).

• Effects of IR on Nervous System: IR can change the functions of the nerves and disturb the process of sending information from one neuron to another neuron. It would impact on the reflective and response ability of human. According to Mr. Sterling Cole, NASA Director General, the effect on nervous system are caused by both high and low doses of ionizing radiation. There are four common problems that happen: tingling, weakness, numbness, and changes of developing emesis, and biochemical and histological changes. (Brimman, Jaksson, & Lindgren, 1961)

The central nervous system (CNS) controls most functions of the body and mind. It consists of two parts: the brain and the spinal cord. The brain gives us consciousness, memory, it interprets the world around us and signals other organs. The spinal cord controls reflexes and transport most signal in and out of the brain.

• Effects of IR on Respiration (nose, mouth, Lung and voice loss): It causes by high dose of radiation on the chest. Human who get the impact will have a shortage of breath that lead to low blood oxygen. High dose of radiation with long term exposure will lead to lung cancer and the person will experience losing weight, headache, backache, tiredness, coughing up with blood, etc. It will affect to the whole respiratory system, it will change the taste, smell and patient's voice.

• Effects of IR on Blood: IR can damage bone marrow and all elements of blood. The low blood cell count happens because of the effect of radiation on blood stem cells, located in the bone marrow. According to a study (Atomic & Agency, n.d.), X-ray doses of 80 Gy can cause the leukocyte count to drop by 50 percent after one day of exposure. If patient's white blood cells is low, they are at high risk to get deadly infection by any diseases. Long term exposure also lead to cancer of blood cells such as Leukemia and Lymphoma. (Mayoclinic.org)

• Effects of IR on the Embryo and Fetus: Any pregnant who have breathed or swallowed in radioactive material may absorb them into their bloodstream. From mother's blood, the radiation goes through the umbilical cord to the fetus or live in areas of the mother's body near the womb and expose the fetus to radiation. It also can interrupt the growth of embryo or harm it to death. For mothers who had received pelvic radiotherapy before knowing they were pregnant, had been reported to give birth to the babies with small head size, as well as other gross malformations (Hall & Wilson, n.d.). Prenatal exposure to ionizing radiation may induce brain damage in fetuses if an acute dose reaches 100 mSv between weeks 8 to 15 of pregnancy and 300 mSv between weeks 16 to 25 of pregnancy.

• Effects of IR on the Embryo and Fetus: Any pregnant who have breathed or swallowed in radioactive material may absorb them into their bloodstream. From mother's blood, the radiation goes through the umbilical cord to the fetus or live in areas of the mother's body near the womb and expose the fetus to radiation. It also can interrupt the growth of embryo or harm it to death. For mothers who had received pelvic radiotherapy before knowing they were pregnant, had been reported to give birth to the babies with small head size, as well as other gross malformations (Hall & Wilson, n.d.). Prenatal exposure to ionizing radiation may induce brain damage in fetuses if an acute dose reaches 100 mSv between weeks 8 to 15 of pregnancy and 300 mSv between weeks 16 to 25 of pregnancy.

V. Conclusions

Based on these above concrete information and research, the effects of ionizing radiation on the human body is very crucial to concern about. It has both advantages and disadvantages to the human health. The most common effect is tumor or cancer that occurred when the cells are damaged and misread repair after being exposed to ionizing radiation. However, its impacts could not be compared with its advantages. Ionizing Radiation is widely used in many sectors such as industrial and medical sector, including for agricultural purposes (e.g., radiolysis of phosphorus-32). X-ray opens a wide window into diagnostics medicine and also led to the discovery of CT scan. Nowadays we can cure most cancers at early stages using radiation therapy. We will not clearly aware long term problems if we follow with the right way. To sum up, ionizing radiation does affect human health in some ways (especially at high doses). However, it has tremendous benefits to human and it is very safe to use in medical purpose (diagnostics and treatments).

VI. Acknowledgment

I would like to greatly thank to the Twincle program and Twincle program's staffs, especially to Prof. Midori Kishimoto and Prof. Kelle Yoshino, and Chiba University for allowing us to obtain this wonderful opportunity from the program.

We also would like to thank to our University and professors for believing in our team and for sending us to the program.

VII. References

- <https://www.cdc.gov/nceh/radiation/emergencies/ers.htm>
- <https://hps.org/publicinformation/fq/tq/whatradiation.html>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4548264/>
- [https://www.clinicaloncologyonline.net/article/S0936-6555\(15\)00055-4/fulltext](https://www.clinicaloncologyonline.net/article/S0936-6555(15)00055-4/fulltext)
- <https://www.cdc.gov/nceh/radiation/emergencies/factsheet.html>
- <https://www.iaea.org/sites/default/files/publications/magazines/bulletin/bull34/0340453006007.pdf>

No.52

Unit A: Kentaro Sugiyama / Akari Chiba
Chihori Matsumoto / Kimika Ito



TWINCLE PROGRAM IN THAILAND

SCHEDULE

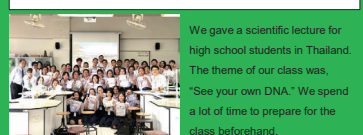
Date	Day	Activity
20. Aug	Tue	Arrive in Thailand Meeting / Guidance Basic Thai language class Japanese culture class ① Thai cooking class
21	Wed	Thai weaving and carving Thai cooking class
22	Thu	Science Class ① (Satirinthaburi School)
23	Fri	Move to Ayutthaya
24	Sat	Trip to Mahidol University
25	Sun	Meeting / Guidance Thai language class Thai cooking class
26	Mon	Sightseeing (Wat Don Wai Floating Market, Don Wai Temple, Museum Siam and Khao San Road)
27	Tue	Japanese culture class ② Science Class ② (Nawamintrachinut Sirithithayha Phuthamonthon School) Experience Thai Massage
28	Wed	Final presentation
29	Thu	Packing and free time
30	Fri	Arrive in Narita
31	Sat	

JAPANESE CULTURE CLASS



In Japanese class, we taught Origami and calligraphy to Thai students. In the Origami section, they enjoyed making cranes and Ninja-stars, a throwing knife. In the calligraphy section, students learn how to write Kanji, a kind of Japanese character, with a brush. Later, they tried to write their name using Kanji. They looked very happy and we were happy too. They showed their nice works each other and took them as a souvenir.

SCIENCE CLASS

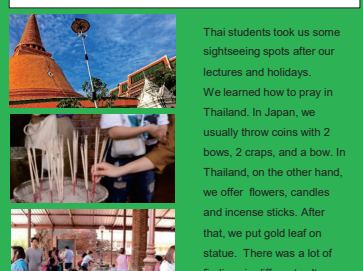


We gave a scientific lecture for high school students in Thailand. The theme of our class was, "See your own DNA." We spend a lot of time to prepare for the class beforehand.

The experiment was to take out our cells from inside of cheek. At first, we were so nervous that we had to teach them in English, but gradually, that feeling turned into a joy.

After the experiment, students gave us many comments saying our lecture was very attractive. We could spend wonderful time and opportunity with them.

SIGHTSEEING



Thai students took us some sightseeing spots after our lectures and holidays. We learned how to pray in Thailand. In Japan, we usually throw coins with 2 bows, 2 craps, and a bow. In Thailand, on the other hand, we offer flowers, candles and incense sticks. After that, we put gold leaf on statue. There was a lot of findings in different culture.

Having experienced the TWINCLE

Thanks to all members participated in the program, including TWINCLE office and both Thai students and staffs, we finally succeeded whole events. We are sure that this precious experience lead us to the next level. We think it is really important to have a good relationship between Japan and Thailand and keep exchanging both cultural perspectives. We hope our endeavor can contribute to the program held in the future.



TWINCLE PROGRAM IN THAILAND

Enami Kamata, Kaho Endo, Airi Tanabe, Ryushi Shimazaki



SCHEDULE

We stayed at Bangkok in Thailand for two weeks.

We tried various activities with Kasetsart university and Mahidol university students. Through our stay

in Thailand, we learned Thai culture and the importance of accepting others' feelings and ideas.



JAPANESE CULTURE CLASS

In Japanese culture class, we taught Origami and calligraphy to Thai students. They enjoyed our class while feeling different of Thai culture and Japanese culture. We

are surprised Japanese culture such as

MANGA, ANIME and

WASHOKU is popular

in Thailand.



THAILAND CULTURE

Mahidol university and Kasetsart university warmly invited us.

They taught us how to make Thai foods and traditional crafts.

Thai food has a very good balances of these tastes and Thai traditional crafts are so splendid.



SIGHTSEEING

Both university students took us some great tourist spots and historical buildings. For example, we went to see "Wat Pho." It was so gorgeous and beautiful. As there are so many places to visit in Thailand, I would like to visit all places someday.



Date	Day	Activity
20 August	Tue	Arrived in Bangkok
21	Wed	Japanese culture class①
22	Thu	Thai weaving and carving Thai cooking class
23	Fri	Science class① (Kasetsart University Laboratory School)
24	Sat	Japanese culture class②
25	Sun	Shibuya109 market (Antiques the weekend)
26	Mon	Learning Thai language Thai cooking class
27	Tue	Sightseeing (Wat Pho, Wat Phrayanagorn)
28	Wed	Japanese culture class③ (Science class②)
29	Thu	Science class③ (Nanayamacharakul Sirasarakulwong Pabnamonthon School)
30	Fri	Sightseeing (Central world Platinum fashion mall)
31	Sat	Arrived in Narita

SCIENCE CLASS

We taught two science lessons for high school students in Thailand. We extracted DNA from our own cheek.

The students listened to our

explanation intently and

worked hard on the experiment.

It was difficult for us

to explain the topic in English,

but it was very

valuable experience for us.



FINISHED THE TWINCLE

In twinkle program, we had much

wonderful encounters every day.

At first, we were nervous

about staying in Thailand. However,

thanks to twinkle program, member,

we had great experience, and learn

about Thai culture.

We are grateful for twinkle

member's support.

We love Thailand so much!!



TWINCLE PROGRAM IN THAILAND

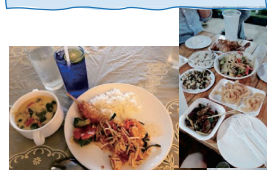


CHIBA UNIVERSITY

MAO ASHITOMI NANAMASHIKO
AMON MIZUI TAKETO DOI

Date	Day	Activity
26 Aug	Mon	Arrival in Thailand
27	Tue	Opening ceremony Tour of university
28	Wen	Japanese Class Science Class Tour of museum
29	Thu	Science Class Thai boxing
30	Fri	Final Presentation
31	Sat	Sightseeing (Ayutthaya)
1 Sep	Sun	Sightseeing (Bangkok)
2	Mon	Opening ceremony Tour of university
3	Tue	Japanese Class Science Class
4	Wen	Japanese Class Science Class
5	Thu	Final Presentation
6	Fri	Free time
7	Sat	Arrival in Narita

CULTURE & FOOD



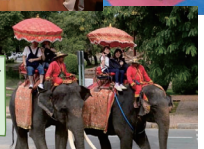
Thai food is hot and sour. But we ate many delicious dishes. And we ate INSECTS.

In Thailand, we could feel the difference in culture. Especially we were surprised by the traffic situation.



SIGHTSEEING

The students of university took us some tourist spots after the class of experiment and holiday.



UNIVERSITY

Both universities welcomed warmly. In welcome party, Chulalongkorn University's students performed Thai's traditional dance and music. It was very precious time for us.



FINISHED

At first, we had some anxiety about twinkle program. Teaching students in English is very difficult. However, thanks to twinkle member, twinkle office, and teachers and students in Thailand, we spent enjoyable and full days. We miss the Thai people who took care of us. This experience will make us more grow up. I'd like to appreciate everyone. We love Thailand!!



TWINCLE PROGRAM IN THAILAND 2019



Science class

★ theme
Leaning how maglev trains move

★ what we did

1. explaining Fleming's rule

2. making electronic swing to visualize Fleming's rule

3. explaining a principle of maglev trains



Japanese class

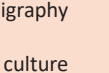
★ theme
origami and calligraphy

★ what we did

1. making animals with origami

2. writing kanji with calligraphy

3. sharing the Japanese culture discussing in Japanese



★ what we were impressed is...
Thai students could speak Japanese much better than our expectation



Review of our class

Questionnaire result

Many students seem to take our class again!! Thank you!!

What we have to do is

to improve presentation and communication skill in English!!



Finally

Twinkle program is a good chance to realize how difficult it is to create a class and to teach. But we also learned how fun it is to make a class, experience the different culture, and connect many friends. We would like to make use of Twinkle program experience in our future!

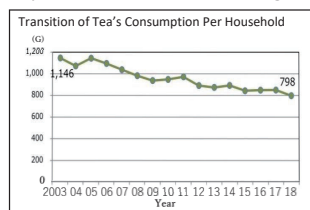


KYUSU PROJECT

Hitomi Myojin, Mizuka Takano, Nodoka Nakaya, Mona Hamada, Mizuki Watanabe (Sakura High School)

Today...

Kyusu tea culture is declining.



Ministry of Agriculture, Forestry and Fisheries

Our Goal

Promoting the Japanese tea culture with young people and the world!!

Survey

① Kyusu's Advantage

- JAL
- First Class⇒Brewing tea using kyusu
- Economy Class⇒Uses tea packs
- Good for Health
- Goes well with Japanese Food



③ We took a survey in Singapore in summer.

Q. Do you know how to make tea with kyusu?

A. No one knows it.

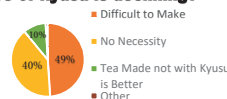
In Singapore Sep 2019



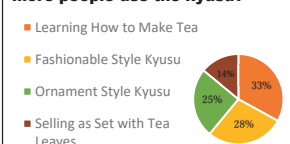
Our Suggestion

We decided to make Promotional Video!!

② Q. Why do you think that the culture of kyusu is declining?



Q. What do you think will make more people use the kyusu?



N=111 Oct 2019 Te Sakura High School Students

Future Plans

Create a Video about Kyusu

- Japanese
- English
- Chinese

Upload the Video

- YouTube
- Tripadvisor

Reference

・農林水産省「茶をめぐる情勢」2019年11月4日
・<https://www.tv-tokyo.co.jp/rippenkitaihitu/smp/>
テレビ東京「世界！ニッポン行きたい人応援団」

No.57

Halal Ramen

Azu Sakano, Yuto Imanishi,Natsuki Kashiwabara, Momoka Sambe, Kanna Matsumoto (Sakura High School)

PURPOSE

1.Reduce Muslims' food concerns in Japan
2.Increase Muslim tourism in Chiba
3. Expand the Halal market scale in Japan

PROPOSAL

•Create Halal Ramen using ingredients from Chiba
•Provide restaurants and universities with Halal-safe ramen

SURVEYS

The Food They Want to Eat in Japan

	Singapore	Malaysia	Indonesia
1	Ramen	HSJF*	HSJF*
2	Sushi	Fish	KFC
3	Sashimi	Ramen	Okonomiyaki
4	Tempura	Rice	Ramen
5	Yakitori	Beef	Soft Drinks

*Halal Safe Japanese Food (Chiba Prefecture) (The Japan National Tourist Organization) (Council of Local Authorities for International Relations, Ministry of Foreign Affairs)

Number of SE Asian Muslim Tourists Coming to JPN

Year	Singapore	Malaysia	Indonesia
2012	10,000	15,000	20,000
2014	12,000	18,000	25,000
2016	15,000	22,000	30,000
2018	18,000	28,000	35,000

Major Religions of SE Asia

Country	Religion	Percentage
Singapore	Buddhism	~70%
Malaysia	Islam	~60%
Indonesia	Islam	~85%

1.About Halal Ramen

Ummami Intensity

Glutamate 100% 50% 0%
Inosinate 0% 50% 100%

Glutamate are MSG

2. Tasting Event

Feedback and Advice

(From Afghans)

●Japanese
Same flavor as Japanese original ramen

○Muslim(JPN 6 years)
Likes both styles of ramen.

○Muslim(JPN 1 year)
First time eating ramen.

Good!

Not Good

OUR FUTURE PLANS

• Develop a chicken ramen (Using more Vegetables)
• Go to Halal food shop more and research
• Offer ramen menu to companies and school cafeterias
• Look at making menus in Arabic, Indonesian, Malaysian, and English.

REFERENCES

• 飯屋咲丸、佐々木菜穂 (2018) 平成 29 年度千葉県私立高等学校 SGH 論文「Japanese Ramen for Muslims」
• 平成 27 年度輸出戦略実行事業 国内ハラル認証取得企業のハラル食品輸出取り組み事例 農林水産省
• 平成 26 年度ハラル食品に係る実態調査事業農林水産省・朝日新聞 2019 年 7 月 8 日「ムスリム職場で過ごす」
• 日本ハラル協会・ハリーセイザー「日本とイスラームの関わりの再考」、日本うま味調味料協会・RESAS 地域経済分析システム

No.58

Eliminating the Education Gap in Rural and Urban Areas in Vietnam

Urawa Girls' Upper Secondary School
Shibata Hana, Fujisawa Kotoha, Hosoba Miho, Murakami Nozomi

1.Introduction

There is an education gap in rural and urban areas in Vietnam. This problem is important because education inequality will affect children's future.

2.Current Situation

A huge gap in rural and urban areas can be seen

① in wealth although Vietnam is one of the fastest growing countries in Asia.
② in education opportunities

3. Research Question

What can we do for eliminating education gap in rural and urban areas in Vietnam?

4. Hypothesis

Vietnamese children in the countryside have difficulty receiving education because of financial gap.

5. Research Method

● Lecture ● Interview ● Literature Survey

6. Findings

① Difference in Monthly Income

	Average income per person (1,000 VND)
Around the Red River delta	1,567.8(≒7,839yen)
The northwest	740.9(≒3,704yen)
The southeast	2,165.0(≒10,825yen)
Mekong delta	1,247.2(≒6,236yen)

② Difference in Educational Opportunities

The rate of students going on to high school

Area	Rate (%)
around the Red River delta	73.8
the northwest	40.2
the southeast	56.9
around the Mekong delta	45.1
national average	58.2

③ School Expenses Going Up Under New Compulsory Education System

1998 5 years in elementary school required

2005 9 years in elementary (5 years) and junior schools (4 years) required

● Higher School Expenses
Parents have to pay more for school expenses as compulsory education system was changed in 2005.

7. Discussion

As a result, there is a gap in education opportunities in rural and urban areas because of financial reasons. Bridging the educational gap may help reduce the children's economic inequality in the future.

8. Solution

① Crowdfunding

Ex) Waseda Univ. "Doors"

② Sending School Supplies to Children in Vietnam

Stationeries

③ Cost Reduction by Doing Away With School Uniforms

9. Conclusion

Under the current situation, children in the rural areas in Vietnam have difficulty receiving education opportunities due to financial problems. The solutions we suggested today are just a small step. We strongly insist that the government should tackle this issue with fundamental solutions: enforcing the law which will make compulsory education free of charge or providing financial aids to cover the school expenses that poor families in the rural areas can't afford. SDGs #4 aims at providing everyone with quality education. No one should be left behind.

No.59

Improving Labor Productivity in Vietnam Before the Economic System is Established

Urawa Girls' Upper Secondary School
Atsuko Otsuka, Nozomi Ono, Riko Kubota, Futaba Suzuki, Yumeko Yamguchi

1. Introduction

Vietnam's economic growth rate keeps increasing. However labor productivity is low, only 7.3% of Singapore. Unless labor productivity is improved, working situation is getting worse.

2. Research Question

How do they improve labor productivity?

3. Hypothesis

Improving labor productivity should avoid work environment being worse.

4. Research Method

● Literature Survey
● The Internet

5. Findings

① Labor Productivity and Working Hours

As working hours are shorter, labor productivity will be higher.

② Long Working hours in Vietnam Longer than those of Japan

country	Germany	Denmark	France	Finland
time	25	29	27	29
country	Sweden	Japan	America	China
time	27	39	34	45

The average of working hours a week in major countries in 2018, Japan and America in 2016, China in 2015 reference OECD StatsExtracts"Hours Worked", 2018データブック国際労働比較

③ Previous Example of Success :

Controlled working hours lead to high labor productivity.
● Limited by Law and Checked Strictly
● Flextime is introduced

6. Discussion

In order to improve labor productivity, working hours should be reduced. Controlling and checking working hours strictly is needed. Also, introducing flextime and working to suit their lifestyle allows them to concentrate better at work. This is essential for improving labor productivity.

time administration
improve labor productivity
concentration

7. Solution

① To Enforce the Law About Working Hours

<present labor law of Vietnam>	<suggestion>
working 48 hours	→ 40 hours
If working hours don't exceed 48 hours a week, we should change working hours per day from 8 hours	→ -to change -To regard extended hours as overtime

② To Check Working Conditions

●Survey Contains:working hours, holiday acquisition conditions
●In order to reduce working hours in companies

→Announce the name of the companies which don't obey normal working hours by using SNS and the media.

③ Introduction of Flextime

mon	tue	wed	thu	fri	sat
5	10	6	9	8	2

total 40 hours

<Advantages of Flextime>
●Relaxing traffic congestion by shifting the starting and closing times
●Secure workers who are capable of self-management
●More concentration on working in the self-suited
●Create the work-life-balance by efficient time
●Paying system independent from overtime treatment

7. Conclusion

These three suggestions above mentioned will lead to higher labor productivity and to further economy development of Vietnam under good working environment.

No.60

<<Change of "Village of Negishi" in TOKYO>>

Shibaura Institute of Technology Kashiwa High School
RISAKO SHIBA

SUMMARY

Research of the Negishi area around the Uguisu-dani Station, and find the reason why this town was changed.

HISTORY

I.Zenmuon Era- Kamakura Era (about 1400 years ago-1240)
About 10000 years ago, Negishi was under the sea. It was one of TOKYO BAY.
In Yayoi Era(B.C.400~A.D.300) Around Negishi was become a land gradually also, in Kofun Era(600~700) Kofun ("Tomb of Noble people) was made near the Negishi, and Toriiwa Shrine was built in 651.After that, Shitaya Shrine was built at Shinobugakushi, Ueno in 730.Even though such develop, Negishi wasn't developed. At that time, Negishi was called "Negishi Field", so there was a farm village.
However, Negishi started to be changed. In 1248, Eisou-Temple was built at Negishi 3-chome, and in 1578, Tsunom-Temple was also built at Negishi 3-chome.
II.Muramachi Era-Early Edo Era
First, Kana-Temple was built in 1575. Since then, many temples were built at Negishi 3-chome. For example Susan-Temple (in 1400) Singen-Temple(in 1658) Eishou-Temple(in 1689) Senjimon-Temple was once built in Shitayachou("Nowadays,Shitaya-Chou is called as "Okachimachi"). But it was moved to Shitaya-Kanagashi in 1696.
III.Middle Edo Era-Late Edo Era
Many Niuv-tennichi("Shops which sell fish, often built near the post-town) were built in Negishi, but they were changed to Asahi chaya("tents where to play with Geisha")
Also many temples caused to be built Hanamachi.In Japan temples have the custom called "Shoujin-Onchi" ("Shoujin-Onchi" means that people who abstain from food and alcohol also avoid eating meat, drinking alcohol, and having sexual intercourse because of fasting shriners, religious services or funeral of relatives). Therefore, many fishshops were built around the temples and shrines. There was the fishshop in Negishi. By these factors, unique atmosphere of Nowadays Uguisu-dani was made since then.
Later,Asagao Festival was begun at Singen-Temple.It's because many gardeners lived in Negishi, also Negishi had a lot of vacant area by configuration.
IV.Meiji Era-Before WW II
In Meiji Era, many artists started to move Negishi because Negishi also had beautiful natures.
In Taisho Era, Negishi was famous for popular fishshops. So Negishi had grown as a big red light district.
V.After WW II - NOW
After WW II, Japan was ruled by U.S. in Negishi, started to build cabarets for the American
It's because cabarets were service club.After the independent, cabarets had remained there.
Also, cabarets had many costs, and costs became to stay. Negishi, so they needed hotels.
That's why many hotels were built in Negishi. And not only costs, but also couples started to use hotels in Negishi.

GEOGRAPHY

In Uguisu-dani, There are two borders. The railway and Kototoji-Street
I think the railway and Kototoji-Street play a part as the "Border". It's because the Kaneieji-Temple is opposite the hotels between the railways also the historical buildings are opposite the hotels are between the Kototoji Street. Through the border,atmosphere of the town has changed completely.
First,railway separates the Kaneieji-Temple and hotels. It is also related the level of land.
Kaneieji-Temple is on the Nippori Terrace, but railways was once the marsh. So it is low-lying land. The level of land influence the atmosphere of the town. high-level area and tend to be built the shrine or castles. Also Kaneieji-Temple was also the Imperial Mausoleum of Tokugawa Family. So it is very holy place. Opposite of railway is low-lying land. There are many hotels. And also, low-lying land have an inclination to gather such the sexual services bar. The railway is the physical border.
In contrast,Kototoji-Street is mental border. Kototoji Street separates the hotels and temples,historical buildings.Even though between Kototoji Street and hotels are no difference of levels of land,it plays a part as a border. In my opinion, it can be consider the residents' mentality to protect their tradition from hotels.

CONSIDERATION

The reason why Negishi had changed is related with the war. However, why cabarets were made in Negishi? It may be caused by historical things and geography. Because of the land-level, many fishshops have made in Negishi since Edo Era. Atmosphere of area is made by land-level but it is also connect with the history.

No.61 The Relationship between Modern Japan and old proverbs

Shibaura Institute of Technology Kashiwa High School 11th grade Aruto Kaneda

【Abstract】 A lot of proverbs are known among Japanese people these days. Then, I wondered why we know proverbs. We tend to guess we have been using proverbs. However, not all proverbs had been known in Japan for a long time because proverbs are generated word. Many historical factors generated "National Language" such as Japanese and "National Language" included proverbs. In Japan, "National Language" was generated by Japanese government in Meiji era (1868-1912). Therefore, researching proverbs means researching Modern Japan. Then, I researched the question, why do we know proverbs, on three aspects, which were "proverbs", "National Language" and "Nationalism".

【Keywords】 Proverbs, National Language, Japanese, Nationalism

【Purposes】 What I considered at first was "Why Japanese proverbs are known among a lot of Japanese people". The answers I could guess were that many people use in daily lives and we were taught in school. So I thought the recognition was something to do with school education. Then, I am going to tell that Japanese language did not exist naturally but was made artificially and clarify what has something to do with Japanese from a view point of proverbs. And I also researched particular role of proverbs.

【Methods】 I put forward a hypothesis about integration of proverbs and Japanese language and read some books which tell about "proverbs" or "National Language". Then, I noticed that Nationalism has something to do with Japanese. I learned Nationalism too.

【Considerations】 1-4. What are proverbs? Proverbs are phrases which were said since ancient times among people and they tell us lessons. Without some of them, many proverbs' origins are not known. By the way, it is said that proverbs already existed 1,000 years ago. In Edo era (1603-1868), dictionaries included proverbs were made and many people played "Iroha-karuta" in big cities such as Edo (Tokyo), Nagoya, Osaka, Nagoya. "Iroha-karuta" is Japanese traditional card game and proverbs are written on cards. That's how Japanese people came to know proverbs in Edo era. From these factors, it can be said that proverbs are developed in Edo era.

Birthplace	from	examples
Japan	"Baka" or "literatures"	"Go to Zenkōji temple pulled by a cow" (牛に引かれて参光寺参り)
Japan	Persons	"Kobo never choose a pen" (弘法筆を選ばず)
Japan	Anecdotes	"Send salt to your enemy" (敵に塩を送る)
China	History books	"You cannot get the tiger cub if you don't go into the den of the tiger" (虎穴に入らずんば虎子を得ず)
China	Other books	"Spilled water never return" (覆水盆に返らず)
Other countries	Aesop fable	"Sell the cat" (猫を賣に譲)
Other countries	Bible	"Eyes for eyes, teeth for teeth" (目に目を歯に歯を)
Other countries	Person	"Time is money" 時は金なり (ベンジャミン・フランクリン)

Most proverbs are based on books. And for example, "Time is money" was written in Japanese textbooks in 1882 though it was not generated in Japan.

2-4. "National Language" and proverbs "National Language" is a language which nationals recognize is a language in their own country. This is made by translating written languages which used in wide area over a long time. If I call that written language "Normal Language". In Japan, Normal Language was Chinese. People who knew Normal Language can study because Normal Language had been written in wide area for many years among intellectual. The point is that National Language was not made naturally. Also, National Language plays a role as a base of nationalism. There were three reasons why Japanese had become National Language. First, Japanese written language were high position and high level because Japan was far from China and Japanese people was writing Kana, which is a kind of poem in Japan. Second, printing technique and capitalism were developed in Edo period. It was one of sign

of modernization. Capitalism is a economy system. Third, Japan was not invaded by European countries.

Patterns	Nationalism	examples
The areas nation lives in > country	require integration of nation	Integration of East and West German
The areas nation lives in < country	require independence	Kurdish nationalism
The areas nation lives in < country	try to increase unity of nation	Japan
Nation don't live in specific area	x	Jews

The most general definition of nationalism tells that nationalism is the way and moving which try to match a unit of government and that of nation. In Japan, a base of nationalism seems to have been made from integration of Japanese language by developing of economy in Edo period and education system which is called "Terakoya". After Edo period, in Meiji period, the integration of national economy which was made from building systems of postal service and communications network because the government in Japan was trying to make centralised country. They also spread official education.

4-2. Modernization in Meiji era Due to the winning of England in the Opium War, some linguists thought they have to build a strong country. In order to achieve it, they needed to grow Nationalism among Japanese people and make people feel they are Japanese by integrating religions and languages. In a side of religion, it was achieved. However, in that of language, it was difficult because differences of language between people in a large city and in countryside. Edo had more than one hundred people at that time and there were proverbs written in "Iroha-karuta". "Iroha-karuta" was played in not only Edo but also Osaka and Kyoto. Therefore, proverbs were common among a lot of people. Linguists may have tried to use proverbs and grow national ism. What I thought was that adding proverbs into National Language was efficiency so as to grow Nationalism so, proverbs have been taught and known among Japanese people.

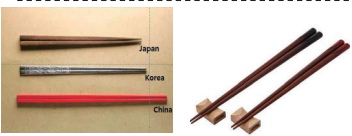
【Conclusion and Plan】 I found the reason why Japanese proverbs are known among a lot of Japanese people. That was because "Iroha-karuta" was played by many people in a large city such as Edo, Osaka and Kyoto. And these cities had a sign of nationalism. That means having Japanese proverbs be National Language was efficiency in order to grow Japanese nationalism because Japanese sayings were known among hundreds of people. I am going to continue this research by comparing roles of proverbs and other "National language".

【References】 "Aren't there no lie in proverbs?" Tetsuki Kinoshita "Koujien third edition" "Nation to Nation" Nobuaki Shikawa "The history of Japanese" Naoki Katsumata "The time Japanese die" Minao Wazurara

No.62

Why do Japanese use chopsticks? Shibaura Institute of Technology Kashiwa senior high school second year Yunusuke Nishikawa Ayumu Hanaoka

<<Abstract>> We study chopsticks from various factors such as food culture, history, religion, and geography. We also study the manners of meals and the food culture of other countries. We consider the reasons why Japanese people use chopsticks and the special value of chopsticks from them.



<<Motivation>> We wondered why we use chopsticks that are difficult to use, even though we can eat easily with a fork and spoon.

<<The contents of the paper>> Why Chopsticks Are Used in Japan We researched why chopsticks are used in Japan. Chopsticks came from China in the Asuka period and spread from then. Chopsticks are regarded as special in Japan, just as chopsticks appear in myths. In Japan, the values of tableware and the manners of chopsticks are based on many myths.

Why chopsticks came to be used, when they spread, and what they meant. The History of Chopsticks Chopsticks are generally derived from China.

But we want to introduce how chopsticks spread in their current form. Why are tableware other than chopsticks used? Here's how and why tableware other than chopsticks is used in different areas.

Cultural differences from tableware We are comparing the origins of each food and the differences in the food culture of the region that uses them.

<<Research currently underway>>

- The Myths of Chopsticks
- History of Chopsticks in Japan
- History of Chopsticks in China
- Tableware other than chopsticks

<<Summary>> Why Chopsticks Were Used in Japan

The prosperity of diplomatic relations with China. It was suitable for the climate and food culture of Japan. Since ancient times chopsticks have been considered special in Japan with the view that chopsticks connect God and human beings. Why Chopsticks Were Used in China The staple food has changed to rice and rice has spread across China. Confucianism prevented knives and forks from spreading

	China	Japan
BC14c	Chopsticks for cooking were born.	
BC4~3	Chopsticks for meals were born.	
BC2~1	Chopsticks have become popular.	
AD5~6		Chopsticks for meals came from China.
AD6~7		Chopsticks have become popular.

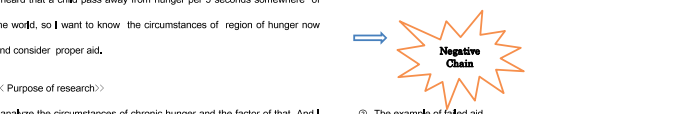
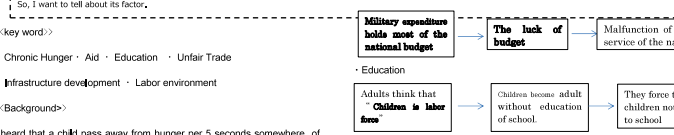
<<Future Prospects>>

- We will study new questions that have emerged while conducting research.
- Diplomacy between Japan and China
- How the Japanese perceive God
- The connection between the Japanese and the tree
- About Confucianism
- The Relationship between Japan and Knife and Fork
- Manners of meals

No.63

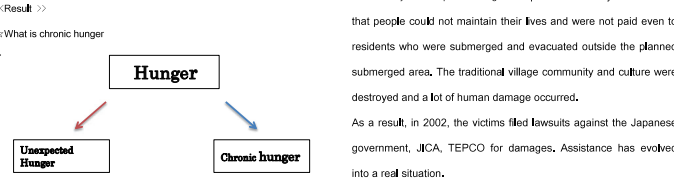
<< Chronic Hunger and Aid >> Shibaura Institute of Technology Kashiwa senior high school second year Yuko Tamao

<<Summary>> I'm researching about world hunger. Particularly I'm researching about chronic hunger. It is very complicated problem because it is composed of many factors. So, I want to tell about its factor.

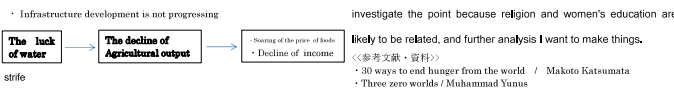


② The example of failed aid. In 1997 in Indonesia, the aid which build the dam whose name is "Koto P an jang" dam by Japanese organization development aids. However, 124 square kilometers are submerged and 23,000 people are forced to move other place. Furthermore, flooding which was unexpected caused and Many wild animals such as Sumatra elephants, Sumatran tigers, and tapers have died because they lost their place of living. Compensation money was so small that people could not maintain their lives and were not paid even to residents who were submerged and evacuated outside the planned submerged area. The traditional village community and culture were destroyed and a lot of human damage occurred.

As a result, in 2002, the victims filed lawsuits against the Japanese government, JICA, TEPCO for damages. Assistance has evolved into a real situation.



- Unexpected hunger needs urgent aids which give the region of hunger foods. Its factors are strife, natural disasters.
- Chronic hunger needs the aids which makes the people become independent.
- These have different factors and the thing of need at all.
- ③ The factor of chronic hunger in detail.
- Infrastructure development is not progressing



No.64

Male discomfort with women-only car ~Consider the inner surface of things~ Shibaura Institute of Technology Kashiwa High School 2-4 Haruya Tanibuchi / Eisuke Yoneda

【Abstract】 1. Whether there's male discrimination. 2. Why some men feel discomfort with women only car 3.How we can reduce male discomfort

【Key Words】 Gender · Women-only car · Discrimination

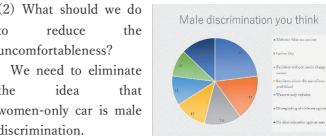
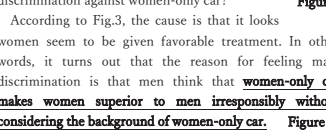
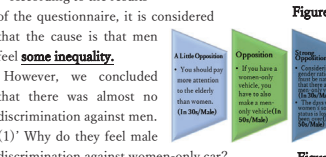
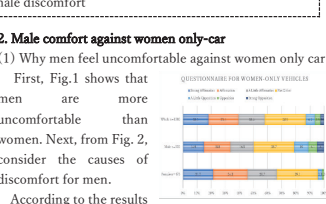
【Purpose】 Our purpose is to discover the way we can reduce male discomfort.

【Method】 First, we define the word "discrimination" according to a book, Deborah Hellman, When Is Discrimination Wrong? (Hosei University press, 2018). After that, we compare the definition of "discrimination" with current situation of women-only car and consider whether there is male discrimination or not.

【Consideration】 1. Whether there's male discrimination in women-only car (1) Women who use women-only car a, There is a despisal. b, The person who despises is in a position where he can despise. c, He lacks respect. d, He expresses it.

2. Railway companies that have women-only cars a) Consideration about the conditions for discrimination a) Railway companies are organizations and are in a position to despise men as individuals b) Railway companies hardly despise men c) Railway companies hardly lack respect d) Railway companies hardly express the lack of respect

According to the above consideration, there is almost no discrimination against men.





<Essential>

By definition, only the driver is responsible, but the system as well as the driver should take responsibility.

<Purpose>

We are going to uncover who should take responsibility for Level 3 automatic car accidents which many developed countries have been exploiting enthusiastically.

<Background>

Some countries are struggling to enact laws in regard to automatic car accidents, so we want to come to some conclusion in our own way.

<Content>

(1) The levels of automatic driving system

level	content
0	Driver should drive constantly
1	Automatic driving systems perform one of the operations, acceleration, steering or braking.
2	Automatic driving system performs multiple operations simultaneously among acceleration, steering, and braking.
3	Automatic driving system accelerates, steers and brakes only in limited situations or traffic conditions, and drivers must respond when the system asks.
4	The system performs all operations such as acceleration, steering, and braking only in specific situations (for example, on the highways, or except in an extreme environment), and as long as this conditions continue, the driver will not be involved at all.
5	Unmanned operation. The system operates in all

	conceivable situations, and all environment.
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(Ministry of Land, Infrastructure, Transport and Tourism)

(2) Opposition to definition

According to the SAE, the driver is responsible for the accident up to level 3 because he has the authority to drive. However, according to a study by the University of Southampton, UK, "Takeover Time in Highly Automated Vehicles: Noncritical Transitions to and From Manual Control", if you focus on things other than driving, it takes about 4.56 seconds.

In the case of Uber's fatal accident, the system detected a pedestrian 5.6 seconds ago, so it was necessary to evade the steering wheel in about one second. Avoidance is almost impossible, and even if it can be avoided, there is a high possibility that subsequent driving will be dangerous driving.

According to the revised Road Traffic Law, the use of smartphones while driving has been permitted, and the situation of concentration on driving other than driving has increased.

In addition, by definition, the system performs all tasks, albeit under limited conditions, and the driving entity shifts to the system side.

Therefore, it is reasonable to take responsibility not only for the driver but also for the system, contrary to the definition of SAE.

<Future prospects>

We are going to investigate investigate when the person responsible for the accident changes.

PROCESS OF JUVENILE CRIMINAL

Motive

I studied about medical care in prison last year. Through my study, I came to be interested in criminal psychology more. I studied about the mentality of younger criminal this year.

Survey

1. How important youth is

○About youth

Youth is the stage in which human mind and body get the biggest influence.

- Become conscious of oneself
- Psychological independence
- The second rebellious stage.
- A friend is a second version of oneself.

→ Our normal mental development stage is assumes that we are loved by our parents or adults, but in other words, if we are not raised with love, we can not have a good mental development.

→ In youth, our friends are a big presence in our lives, in other words, we can get bad influence from them easily.

2. For independence

○Establish one's identity

Identity is equal to one's character.

Establishing one's identity is to create a strong self. For this process, we reconcile the ideal version of ourselves with the real version of ourselves. If we fail to establish our identity, we fall into an identity crisis.

An identify crisis makes our mentality unstable, robs us of our mental ability, and brings a trying situation for us.

○Psycho-social Moratorium

Someone experiencing a psycho-social moratorium is a person who avoids independence and becoming an adult. This stage is not necessarily bad for humans, however staying too long in this stage causes social impairment in a person.

Study

I think three factors are involved in developing normal mentality for youth.

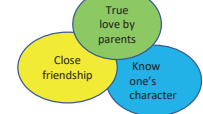


Fig.1 Factors for developing normal mentality for youth

In other words, we may become a criminal without these factors.

○ View of various people
Children need to have a good relationship with their parents for at least the first 24 months. Attachment is emotional ties with a particular person, and if we are prevented from this, we are negatively affected. (from John Bowlby)

We can think about abstract ideas; love, fear, sin, envy, right and wrong from the age of 11 years old. (From Granville Stanley Hall)

We can understand that youth is a very important stage of human life through these words.

Consideration

I learned that love from parents and the environment around a person are connected to their character deeply.

We should understand the specifics of each young person and support them.

Bibliography

高校倫理 新訂版 東京出版
最新図説倫理 浜島書店
10代からの心理学図鑑 マーカスフィックス 三省堂

Japanese fantasy MORIBITO

My favorite series of story is MORIBITO which was written by Uehashi Nahoko. So I studied about charm of MORIBITO and Uehashi Nahoko.

1. MORIBITO

MORIBITO is Japanese story.

This story's out line is:

Balsa, who is a woman guard, saves prince named Chagum who is aimed his life because he became pregnant with an egg of spirit.

MORIBITO was translated into English in 2008, and received Batchelder Award in 2009. Now, MORIBITO is read in the world.

Batchelder Award: Literature award for children's literature translated in the United States.



Fig.1 A image of MORIBITO (English Version)

These countries have translated and published MORIBITO.
US/China/Taiwan/France/Italy/South Korea/Portugal/Spain/

2. Uehashi Nahoko

She is a Japanese writer and cultural anthropologist. She is studying about Aborigine. Also, she writes a lot of popular books. She received Hans Christian Andersen Award. This award is awarded for excellent writer.

3. Charm of MORIBITO

<Balsa>

Balsa is a main character of MORIBITO. She is a very attractive bouncer. She fights against enemy. She is very strong. The scene where Balsa fights is one of the highlights of MORIBITO. Also, Balsa has the strength of those who survived the tough past, which is also the charm of MORIBITO. Uehashi Nahoko says she wanted to write a mentally mature person.

<food>

There are many delicious food that Uehashi Nahoko came up with MORIBITO. A cookbook that reproduces the dishes that appear in the novel has been published in Japan. It is the charm of MORIBITO that you can experience the fantasy world in this way.



Fig.2 A image of MORIBITO (Japan Version)

Conclusion

I think that by projecting the writer's vast knowledge, experience, and thinking, the story will be alive and will attract people beyond the country. I'm happy that as possible will read MORIBITO.

Atami's tourism and economy

Motive

I like travel and I often go to Atami. Atami is very popular. However, I knew Atami used to have a financial problem. I wondered why this happened and why Atami is popular now.

About Atami

Atami is located at the base of the Izu peninsula in Shizuoka pref. It has been famous for its hot springs since ancient times, but in 2011, the number of guests dropped to half its peak. However, only 4 years later, the number of guests increased by **20%**.



↑ Fig.1 Atami's location



↑ Fig.2 The number of guests (sugest.co.jp)

They achieved a **V-shaped recovery**.

I examined why Atami was able to achieve a V-shaped recovery.

Why Atami had declined

Atami's decline may be due to the following reason.

- ❖ Declining population
 - ❖ Changing needs of tourists
 - ❖ Aging citizens etc...
- **No youth !**

In addition, 43% of local people had a negative image of Atami.

How to rebuild

- ❖ Improve image for local residents
- ❖ Disseminating charm to the media
- ❖ Promote "Atami zakura"
[Early blooming cherry blossoms]
- ❖ Promote "Atami baienn"
[Atami plum garden]
- ❖ "Shizuoka Destination Campaign"



Fig.3 Atami baienn →

Interview

I went to the tourist information center at Atami station for an interview.

What I learned from the interview :

- ❖ Last year there were many westerners due to **the Rugby World Cup**.
- ❖ Popular spots are **Kinomiya Shrine and Kiunkaku**.
- ❖ Atami Castle is popular among young people.



Fig.4 Kiunkaku →

Consideration

Atami is crowded with people. This is because various people including the mayor improved the image of Atami. I think not only creating new things, but also re-examining the original ones was the key to the recovery of Atami. Through this study, I became interested in town development. In the future, I would like to investigate the regeneration of other regions.

TRADITIONAL

Kasetsart University

THAI GHOSTS

Mae Nak



The ghost of a loving wife and mother who died during childbirth while her husband Mak was conscripted into the army and sent to war. Despite being dead, Nak wants to be with her hubby posthumously. Mak returns, not knowing that his Nak is dead. The neighbours try to tell Mak that his wife is actually a ghost but he refuses to believe them. After he discovers by chance that his wife is indeed a ghost, he runs away. Furious, Nak pursues him and sears the living daylight out of villages in the process but is eventually subdued by an exorcist and confined to a jar. At the risk of sounding like a romantic, we think her tale is more a tragic love story than horror.

Krasue

Some believe they are a type of spirit that belong to humans who earned a living by deceiving others. When they die, they become krasue who go on to possess the bodies of people who commit the same kind of wrongdoing. In another legend, a woman tries to learn black magic but made a mistake or used a wrong spell, causing her head and body to become detachable. In Thai folklore, krasue are depicted as a woman, old or young, who travels very lightly at night, bringing only her head and viscera along. She floats around with a green glow while finding something to eat and keeps the rest of her body somewhere nobody can find. During the day she lives like a regular woman.



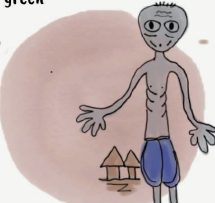
Nang Tani

It's a female spirit that lives inside a type of banana called tani. She appears as a young beautiful woman in a green traditional Thai costume. Her feet don't touch the ground. To summon her, men can urinate on the tree said to be haunted by the ghost or rub their manliness on the tree. Her skin has a tint of green.



Pret

Thais believe that wicked people will be reborn as ugly beings called Pret who suffer greatly as they eat their own blood and pus. This type of ghost also appears in other cultures and is called by different names. Pret look like disproportionately stretched-out versions of Gollum. They have a long neck, emaciated body with belly, dark skin and hands as big as palm leaves. They are as tall as a palm tree and have a mouth as small as the eye of a sewing needle.



Naga Fireball Festival

What is Naga Fireball Festival?



(Ref : <http://www.thaifestivalsblogs.com/nong-khai-naga-fireball-festival/>)

The one of a kind festival celebrated in Thailand.

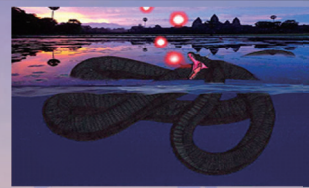
This phenomenon occurs around the end or after the end of the 'Buddhist Lent' period. This is usually in the period of mid to late October and early November.

In this festival, people gather along stretch of the Mekong river, hundreds of red glowing orbs rise from the water at the Mekong River rapidly and light up the dark sky for a few seconds before disappear in the air.

Before the actual event, the locals people celebrate by bursting colorful fireworks, fireboats, and balloons.

Each fireball is welcomed with a massive roar from the people. It is said that the celebration commemorates the return of Buddha in Naga form.

History of the Naga Fireball



(Ref : <https://www.holiday.com/pages/naga-fireball-festival-1231.htm>)

Locals believed that the fireballs are the breath of a gigantic sea serpent called a Naga or Phaya Nak, who lives under the river and wakes up around this time every year to honor the conclusion of the three months long Buddhist Lent or rain retreat season, also called Vassa.

Scientific Theories on Naga Fireball

- There are also scientists who suggest that the Naga Fireballs are a type of free-forming plasma orb, created when surface electricity is discharged in the river's waters.
- Similar to methane, it is theorized to be the product from bacterial reduction of phosphate in decomposing organic material which float to the surface of the Mekong and then burn up in the air.
- Dr. Manos Kanoksiip who studied the Naga fireballs theorizes that the phenomenon requires a precise alignment of the sun, moon and Earth, and that the Mekong river provides a perfect storm of conditions to bring about the fireballs every year at the same time.
- Similar to the swamp gas theory, some believe the Naga lights are flammable phosphine gas generated by the river's marshy environment. Thai Science Ministry's Deputy Secretary, Saksit Tridech and a team of scientists used special equipment to measure conditions around the river and proclaimed that the fireballs were the result of built-up phosphine gas.

ORIGIN

Pho - a combined product of three culinary cultures is Vietnamese-French-Chinese.

- Originated in some provinces (Ha Noi and Nam Dinh) in Vietnam in the early 20th century 1908. Pho appeared in Vietnam 1930. Pho became famous 21st century, become a 'national food'.
- Derived from a Cantonese dish called 'Burdock'.
- Derived from the method of processing French casserole (pot-au-feu).

INGREDIENTS

To serve a bowl of true Vietnamese Pho is meticulous (It takes 8-10 hours to complete).

- "Pho" clear broth is usually made from beef bones (it can be replaced by pork bones), with grilled ginger, grilled onion, and many other special spices
- The meat is beef (served in rare, medium or well-done) or chicken
- "Banh Pho" is traditionally made from rice flour, coated into thin sheets and cut into fibers.
- There are other dishes with "pho" such as "quidy" (fried powder cake), raw vegetables...

PHO

HOW TO EAT

- Time for eating: People eat Pho at any time of the day (for breakfast, lunch or dinner).
- How to enjoy Pho:
 - People use chopsticks and a spoon to eat Pho.
 - First, people add lemon juice, chili sauce and a little of vinegar, pepper.
 - Second, they mix it together.
 - And then, they taste Pho with herbs.
- Where to eat Pho: at home, in street restaurants,...
- Price: One large bowl cost only about VND 20,000-40,000 (90 cents to \$1.80).

COMPARISON

	Pho	Ramen
Broth	Beef bone with spices; ginger and onion and some special spices	Pork bone with many other flavors: miso, bean sauce, curry...
Noodles	Made from rice flour	Made from wheat flour
Extra food with	Beef, chicken, Herbs, chili sauce, pepper, vinegar	Pork, Boiled eggs, dried seaweed...

The Soul Of Vietnamese Cuisine

PHO AND RAMEN

Laos Cultures

The Pha That Luang or "Great Stupa" is the most important Buddhist monument in Laos. The large golden stupa in Vientiane is believed to enshrine a breast bone of the Buddha. The pagoda also known as That Luang is officially named Pha Chedi Lokajulamani, which translates to "World Precious Sacred Stupa".

Pha That Luang Stupa in Vientiane

Hor Phra Keo

Patuxai

Laos Costume

National Dress

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